ASSESSMENT OF MCCALL OIL AND CHEMICAL SITE IMPACTS TO THE WILLAMETTE RIVER

Prepared for

McCall Oil and Chemical Corporation

Portland, Oregon

Prepared by

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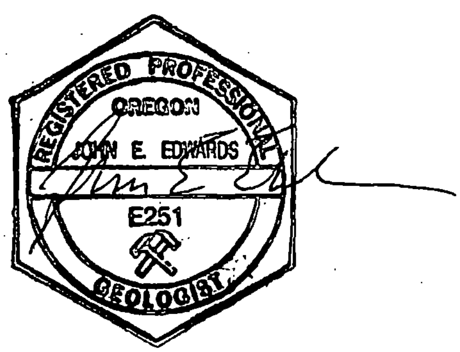

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1 SUMMARY OF FINDINGS

An assessment of the environmental conditions at the McCall Oil and Chemical Site (Site) was performed to determine whether historical or ongoing Site activities may be causing impacts to the beneficial uses of the Willamette River. Following are the key findings of this assessment:

- Chemical concentrations of constituents of interest (COIs) in sediments adjacent to the Site are below relevant risk-based sediment quality guidelines, including draft Lower Willamette Group (LWG) Level 1 ("no effects") levels (Windward et al. 2006), Washington State freshwater Lowest Apparent Effects Thresholds (LAET) (WDOE 2003), and consensus-based Probable Effects Levels (PEL) (MacDonald et al. 2000). These results are confirmed by bioassay tests conducted in sediments adjacent to the Site, which exhibited no biological effects to *Chironomus* growth and survival or *Hyalella* survival. Thus there is no evidence that discharges from the Site have resulted in contaminant accumulations in sediments at concentrations that would cause direct toxicity to benthic organisms in the Willamette River.
- None of the constituents of concern in shoreline monitoring wells at the Site were above chronic water quality criteria in any of the monitoring events (see Table 13). Therefore, there is no evidence that groundwater discharges from the Site are causing direct toxicity to aquatic life in the Willamette River.
- In stormwater samples from the Site, concentrations of polynuclear aromatic hydrocarbons (PAHs), semivolatile organic compounds (SVOCs), arsenic, and chromium are well below their respective chronic water quality criteria (see Table 14). Total copper, cadmium, and lead concentrations are near or below naturally occurring background values in a majority of samples. Zinc concentrations, although higher than background, are nevertheless lower than the mean zinc concentration in ambient urban runoff from the Portland metropolitan area, and well below the National Pollutant Discharge Elimination System (NPDES) stormwater benchmark. Therefore, stormwater discharges from the Site are expected to cause negligible, if any, effects on aquatic life in the Willamette River, especially when consideration is given to the intermittent and variable nature of stormwater discharges as well as mixing and dilution processes in the receiving water.
- The total loadings of metals and PAHs from stormwater and groundwater at the Site are negligible compared to other sources in and around the harbor, and thus the Site provides an insignificant contribution to bioaccumulation risk in the Willamette River.

In particular, it is estimated that Site contribution to the total load of metals and PAHs to the harbor ranges from less than one thousandth of a percent to a few tenths of a percent compared to naturally occurring background metals in transit in the river and ambient urban runoff from the Portland metropolitan area. Other sources of metals and PAHs, including discharges from vessels and marinas, combined sewer overflows, and other less-controlled industrial sites will further dwarf McCall's negligible contribution.

- McCall continues to implement stormwater best management practices (BMPs) to minimize the potential for mobilization of site-related constituents to the river, and to maintain the effectiveness of its ongoing source control efforts. Site stormwater BMPs include use of an oil-water separator to treat runoff from the oil terminal, catch basin inlet protection, routine cleanout of catch basins, and maintenance of Spill Prevention, Countermeasures, and Control Plan (SPCC) plans and procedures.

2 INTRODUCTION

2.1 Background

The Site is located in the industrialized area of northwest Portland along NW Front Avenue (see Figure 1). It occupies approximately 36 acres on the southwest bank of the Willamette River. The Site encompasses six tax lots. The property is currently occupied by two separate facilities: McCall Oil and Chemical Corporation (MOCC), which operates a marine terminal and asphalt facility, and Quadra Chemical (Quadra), which operates the former Great Western Chemical Corporation (GWCC) chemical distribution facility.

Before 1966, most of the land now occupied by the McCall Oil Terminal was submerged beneath the Willamette River (Figure 2). The Port of Portland (Port) created new land along the Willamette during the mid-1960s by dredging and filling along the shore. This land, including a portion of the Site, was deeded to the Port by the State of Oregon in 1967. A detailed description of the ownership and operational history of the Site is in the *McCall Oil and Chemical Corporation Focused Remedial Investigation Workplan* (Workplan) (IT Corporation, November 16, 2000), and in the Remedial Investigation (RI) Proposal, which is Appendix D to the Workplan.

Until 1995, the GWCC facilities consisted of two operating units, the GWCC Technical Center and the GWCC Portland Branch. The Technical Center included the former Chemax operations. In 1995, GWCC's two operating units were merged into the Portland Branch. Current and historical activities associated with the operations of each of these facilities are discussed in detail in chapters two through five of the RI Proposal (Appendix D to the Workplan). McCall purchased the marine terminal property from the Port in 2004 and now owns all of the property shown on Figure 6.

The Site is included in the Willamette Greenway (Greenway) established by the City of Portland to monitor and control land use next to the river. The Site and surrounding properties are zoned for heavy industrial use, both within the Greenway on the northwest (i.e., downriver) bank and outside of the Greenway. Surrounding industries include: petroleum bulk distribution terminals, chemical plants, sand and gravel operations, a steel fabrication facility, shipyards, and rail yards.

In the mid-1920s, the Port purchased the property now occupied by MOCC and Quadra as part of an approximately 65-acre parcel that stretched from the lands now owned by Conoco/Phillips on the west, to the Willamette River. Prior to the mid-1940s the property was vacant. In 1946, Pioneer Flintkote Company (Flintkote) purchased two parcels from the Port. Those parcels are currently occupied by Quadra and the MOCC asphalt plant, respectively.

Flintkote manufactured asphalt roofing shingles and tiles on the property from 1947 to approximately 1982. Historical occupation records indicate that Standard Oil Company operated a distribution center at the site during the 1950s (SAFE 1994). By 1960, Douglas Oil Company (Douglas) occupied this address, and operated an asphalt facility. In 1962, Douglas purchased the facility from Flintkote. Douglas and Flintkote continued to operate their respective facilities until 1982, when both parcels and the improvements were sold to MOCC. Chemax began operations on the former Flintkote site in early 1984. The Portland branch began its on-site operations in late 1985. In 1985, MOCC operated a lube oil distribution facility on part of the asphalt plant site. The lube oil operations were discontinued in 1991.

In the early to mid-1960s, the Port used dredge spoils from the Willamette River channel (primarily fine sand) to create new land along the Willamette River next to the Flintkote and Douglas facilities. As stated previously, this land was subsequently deeded to the Port by the state of Oregon in 1967. In the mid-1970s, MOCC constructed the marine terminal on the filled land.

2.2 Purpose

This report pulls together the findings from MOCC upland investigations and LWG in-water investigations to provide an assessment of river impacts from historic and current Site industrial operations. This report will show that the environmental information obtained by MOCC and LWG indicate that industrial operations at the Site have not significantly impacted beneficial uses of the Willamette River. Several documents referenced in this report were obtained from publicly available LWG records. We understand that these draft documents are currently under review by EPA and its federal, state, and tribal partners, and are subject to change in whole or in part.

Section 3 of this report describes the Site conditions with focus on the conceptual site model and identification of upland COIs. Section 4 provides a summary of historic releases, cleanup actions, and investigations conducted at the Site and neighboring properties. LWG in-water findings on sediment chemistry and toxicity are described in Section 5. Section 6 is a summary of information on potential upland groundwater and stormwater sources to the river from MOCC and neighboring properties. Section 7 provides a risk screening evaluation of potential impacts of Site groundwater and stormwater to the river.

3 SITE CONDITIONS

This description of Site conditions is from the July 2004 MOCC RI Report, modified to focus on potential upland contaminant pathways to the river.

3.1 Conceptual Site Model

The Conceptual Site Model (CSM) identifies the sources, pathways, and receptors that were considered in designing the focused Workplan (Figure 3). Although MOCC and Quadra operate independently, the CSM covers both facilities because the two facilities are adjacent to each other, and have potentially overlapping exposure pathways to the Willamette River.

The CSM illustrates the site's potential exposure pathways from potential source areas to potential receptors. The CSM considers all media including: soil, groundwater, surface water, sediment, and air.

Five classes of potential receptors were identified on Figure 3 on the basis of current and reasonably likely future land use. The site and surrounding area are currently used for industrial purposes, are zoned industrial, and are likely to remain industrial for the foreseeable future.

Of primary concern to this report are the ecological receptors of the Willamette River. For the purposes of the CSM, all flora and fauna potentially exposed to river water or sediments are grouped under the heading of ecological receptors. Potential secondary contaminant sources to these receptors are groundwater and stormwater (i.e., surface water) that discharge to the Willamette River water and sediments. These are two complete pathways that are addressed in this report.

The CSM also identifies some exposure routes for Site trench workers, construction workers, and industrial (occupational) on-site workers. These exposure pathways do not impact beneficial uses of the Willamette River and are not considered further in this report. They will be considered further in the context of the RIFS being conducted under the Agreement with Oregon Department of Environmental Quality (DEQ).

Recreational users of the Willamette River are unlikely to contact sediments and shallow river water adjacent to the Site during swimming and wading activities because the Site and surrounding properties are industrial in nature with no public access facilities. These are therefore considered insignificant pathways. Fish-eating humans and wildlife may be exposed to contaminants that have bioaccumulated in fish tissue; however, bioaccumulation is a watershed-scale issue that is best evaluated in the context of the regional investigation currently underway by the LWG.

3.2 Contaminants of Interest (COIs)

The Site COIs evaluated by MOCC in the Site upland RI were selected on the basis of chemicals that were (1) historically or currently used or stored at the facility, (2) detected in adjacent Willamette River sediment samples, or (3) detected in Site stormwater. The classes of COIs historically or currently used or stored at the Site include:

- Chlorinated volatile organic compounds (VOCs)
- Total petroleum hydrocarbons (TPH) as diesel and oil
- PAHs
- Metals (in particular, arsenic, chromium, and copper)

TPHs have been tested at the Site for the purpose of identifying and characterizing potential upland source areas. TPH concentrations at the Site were also screened using DEQ's *"Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites"* (DEQ 2003). The DEQ guidance was also used to evaluate toxic components of diesel- and oil-range hydrocarbons in soil and groundwater, PAHs in particular.

Because of the extended history of petroleum storage, handling, and shipping at the various bulk terminals in the vicinity of the Site, the following COI's were included in the investigation, although no significant on-site sources of these chemicals are known:

- TPH as gasoline
- Benzene, toluene, ethylbenzene, xylenes (BTEX), and related target volatile compounds per DEQ (2003)

Chlorinated VOCs have not been identified as Willamette River target compounds by DEQ, but chlorinated VOCs have been detected in groundwater at the site. These have therefore been investigated as COIs for the site.

During the Portland Harbor Sediment Investigation Report (Weston 1998), U.S. Environmental Protection Agency's (EPA's) contractor collected and analyzed sediment samples from six Willamette River locations near the site.

The Weston samples were tested for inorganic, SVOCs, VOCs, pesticides, and organotin compounds. On pages 2 and 3 of the Agreement, the agency listed the following compounds that exceeded baseline concentrations, based on the Weston data, established for the Portland Harbor Study Area:

Surface Sediment Constituents Exceeding Baseline Values:

- Aluminum
- Cadmium
- Cobalt
- Lead
- Mercury
- Zinc
- 4-methylphenol
- butyl benzyl phthalate
- di-n-octyl phthalate

Subsurface Sediment Constituents Exceeding Baseline Values:

- Aluminum
- Barium
- Cobalt
- Mercury
- Zinc
- 4-methylphenol
- dibenzofuran
- LPAH
- HPAH

With one exception, all of the constituent concentrations in sediment were well below dredged material screening levels (USACE et al. 1998). The exception was the shallow sample from SD 120 that had a 4-methylphenol concentration of 880 μg/kg. The dredged material screening level for this compound is 670 μg/kg. Of these chemicals, the four SVOCs and PAHs (see above) were retained for testing at the Site. None of the listed metals are part of any process nor are they stored at the MOCC/GWCC facility. Cadmium, lead, and zinc were added to the list of COIs, not on the basis of the Portland Harbor sediment evaluation; but rather because of their occurrence in Site stormwater. Three additional metals—copper, chromium, and arsenic—were also selected as COIs because they were previously used in the production of wood-treating chemicals (CCA) on Site.

In summary, the following COIs were identified for investigation during the Site upland RI:

- Chlorinated VOCs
- TPH as diesel, oil, and gasoline
- PAHs
- BTEX
- Metals (arsenic, cadmium, chromium, copper, lead, and zinc)
- Miscellaneous SVOCs (4-methylphenol, butyl benzyl phthalate, di-n-octyl phthalate, and dibenzofuran)

The above COI were approved by Oregon DEQ, as presented in the RI Workplan.

4 INVESTIGATION AND CLEANUP HISTORY

4.1 Historic Releases and Cleanup Actions

4.1.1 McCall Site

During the period 1955 to present, MOCC and the previous owner, Douglas Asphalt, kept careful records of accidental releases that occurred during industrial operations. MOCC releases related to the Marine Terminal and asphalt plant are documented on Table 1. Great Western Chemical Company also documented historic releases, as shown on Table 2.

Review of Tables 1 and 2 show that most of the releases at the McCall Oil Terminal and the asphalt plant consisted of petroleum products, including diesel, raw asphalt, and bunker C. The table also shows the action taken to clean up each release. Most of the releases at the Great Western Chemical operations were various acids.

The GWCC release history includes a 1992 release of copper-chrome-arsenic (CCA) that occurred at the CCA process area of the GWCC plant. In cooperation with DEQ, excavation and off-site landfill disposal of CCA contaminated soil was completed. The details of the CCA soil cleanup are in Appendix D of the RI Workplan. Monitoring wells MW-1, 2, 3, and 4 were installed to assess possible groundwater quality impacts from the CCA release. These wells were later used in the upland RI.

The Site release history and the locations of key industrial processes were primary factors in the design of the upland RI.

4.1.2 Tube Forgings

Bunker C fuel was released from an underground storage tank on the Tube Forgings plant site. During the McCall RI, bunker C nonaqueous phase liquid (NAPL) was detected adjacent to the Tube Forgings property at the location shown on Figure 5. This is the only petroleum NAPL detected on the McCall Site.

Cleanup of the underground storage tank bunker C release occurred on the Tube Forgings property, and the cleanup is documented in the Groundwater Investigation Report, Front Avenue LLP Site (Maul, Foster, Along, Inc., 2004). However, soil and groundwater data from the McCall RI Geoprobe borings and monitoring wells shows that a zone of bunker C NAPL exists on the McCall Asphalt plant property adjacent to the location of the former bunker C underground storage tank (UST) on the Tube Forgings property. Forensic analysis conducted during the McCall RI confirms that the light non-aqueous phase liquid (LNAPL) adjacent to the Tube Forgings property line is bunker C. The LNAPL footprint is not connected to any of the McCall fuel storage facilities.

However, the McCall RI data indicate the bunker C NAPL is not migrating, and will not migrate to the Willamette River. The location of the bunker C NAPL is approximately 700 feet from the river shoreline, is not considered a future threat to Willamette River beneficial uses, and will only be further evaluated with respect to potential human health risk to site workers or future utility workers.

4.1.3 Willbridge Terminal

Since at least the early 1970s, floating petroleum hydrocarbon products, primarily diesel, with some gasoline, have discharged to the Willamette River along the backfill of the former wood stave Doane Avenue stormsewer and along the backfill of the 1982 City of Portland replacement concrete stormsewer (current City outfall 022). The stormsewer and outfall 022 are located on Conoco/Phillips property within a few feet of the western Site property line. The City stormsewer outfall 022 location is shown on Figures 4, 5, and 6.

From the 1970s through the present, various oil companies have conducted free product recovery cleanup actions where the City stormsewer outfall 022 discharges to the river, just west of the Site. The 2006 photo on Figure 4 shows the location of City outfall 022 in relation to the Site property line and the Site stormwater outfall.

Historic petroleum product releases have occurred on the Chevron Asphalt and Conoco/Phillips tank farms located upgradient from the Site. The petroleum free product has migrated along the City stormsewer backfill to the river. Free product recovery efforts have been conducted on both sites. Dissolved petroleum hydrocarbon plumes exist on both sites.

The current and historic petroleum free product discharges to the river at City stormsewer outfall 022 are relevant to this report because several of the LWG river sediment sampling sites were located very close to the floating petroleum collection booms in the river. As will be discussed later in this report, petroleum-related COIs detected by LWG at sediment sample locations G401, G404, C532, and G399 may be at least partially sourced from the adjacent historic free product discharges in this area of the shoreline.

4.2 McCall Upland Preliminary Assessment and Groundwater Assessment

At DEQ's request, MOCC conducted a 1993 Preliminary Assessment (PA) at the Site, including the MOCC and GWCC facilities. The assessment included a comprehensive review of historic site industrial operations, inventory of historic release records, and identification of potential data gaps for further assessment. The findings of the PA are described in the *Preliminary Assessment of McCAll Oil & Chemical Corporation and Great Western Chemical Company* (Emcon Northwest, Inc. April 5, 1994).

Following the PA, MOCC conducted a preliminary groundwater investigation that included the installation of monitoring wells EX-1 through EX-7. These wells are shown on Figure 5 and were later used in the upland RI. Groundwater quality data obtained during the 1990s from these wells is reported in the 2004 RI report.

4.3 McCall Upland Remedial Investigation

The McCall upland RI Workplan was designed to assess documented upland release locations to determine the nature and extent of groundwater and soil contamination downgradient of each of the suspected upland source areas. Each of the reported releases listed on Tables 1 and 2 were considered in the development of the RI Workplan.

Monitoring wells MW-1 through 5 and EX-1 through 7 existed at the site before the RI began.

As part of the RI, 63 Geoprobe borings were installed at locations designed to assess all of the suspected upland source areas identified in the release records and based on the locations of key industrial processes. The locations of the RI Geoprobe borings and monitoring wells are on Figure 5. Soil samples and groundwater grab samples were obtained at the Geoprobe boring locations. The soil and groundwater samples were tested for the COI identified in Section 3.

The RI also included sampling of MOCC and GWCC stormwater and catch basin sediment, with laboratory testing for relevant COIs.

The soil and groundwater data from the Geoprobe borings, in conjunction with groundwater data from the existing monitoring wells, was used to site additional monitoring wells. During the RI, monitoring wells MW-6 through 15 were installed to completely characterize groundwater quality at the Site. Table 3 describes the rationale for selecting groundwater COIs for testing at various wells and Geoprobe borings based on suspected upland source areas.

The RI groundwater and stormwater data have been screened against relevant criteria to assess potential impact to the river. The screening results are presented in Section 7.

4.4 LWG In-Water Remedial Investigation

The LWG is currently conducting the in-water Portland Harbor RI under an Agreed Order on Consent (AOC) with EPA Region X. The in-water RI has included sampling of sediment adjacent to the Site and adjacent properties owned by Front Avenue LLP and the Willbridge terminal owners. Figures 5, 6, and 7 show LWG sample locations adjacent to the Site, Front Avenue LLP, and Conoco/Phillips properties. The river stormwater outfall locations are also shown on Figure 6.

Figure 7 shows the LWG Round 2A sediment sample sites for a distance of approximately ½ mile upstream and downstream from the Site. The sediment sample locations on Figures 5, 6, and 7 are estimated based on maps in the Round 2A Sediment Site Characterization Summary Report Map Folio (Integral, 2005).

The in-water RI has included sediment chemistry and toxicity testing. The findings from that testing are discussed in Section 5.

5 LWG FINDINGS

5.1 Sediment Chemistry

LWG Round 2 included eight sediment sample locations adjacent to the Site, as shown on Figure 6. The upstream boundary of the Site with Tube Forgings, LLP is at approximate river mile 8.03 and the downstream boundary of the Site with Conoco/Phillips is at approximate river mile 7.8. Table 4 is a list of all the sediment sample sites, including those within approximately ½ mile upstream and downstream of the Site boundaries. The sample sites listed on Table 4 are shown on Figure 7.

Table 4 shows that the following eight LWG sediment sample sites are adjacent to MOCC and GWCC, in order from upstream to downstream:

- G413, C413
- G410
- G407
- G403, C403
- G399
- G391
- C532
- G404

The sample numbers with the G prefix are surface samples obtained within the upper 10 cm of the mudline, and those with the C prefix are subsurface core samples obtained from various deeper intervals.

The LWG sediment samples were tested for a wide range of target analytes, some of which are also COIs in the MOCC Site upland RI. To assess the results of LWG sediment chemistry testing, the concentrations of the following eight Site COIs were plotted on Figures 8.1 to 8.8.

- Figure 8.1 – LPAH (total)
- Figure 8.2 – HPAH (total)
- Figure 8.3 – Arsenic
- Figure 8.4 – Chromium
- Figure 8.5 – Copper

- Figure 8.6 – Zinc
- Figure 8.7 – Dibenzofuran
- Figure 8.8 – 4-methylphenol
- Figure 8.9 – Butylbenzyl phthalate
- Figure 8.10 – Di-n-octy phthalate

In addition, Figure 8.11 is a plot of total PCB concentrations. PCBs are not a Site COI, but because PCBs are a key COI for the Portland Harbor, and because PCBs were detected in samples adjacent to the Site, as well as upstream and downstream of the Site, this constituent warranted further evaluation.

5.1.1 Downstream Trends in Concentration

Figure 8 plots the concentration of each COI in µg/kg on the vertical axis versus the sample location in approximate river miles. The LWG samples within 1/2 mile upstream and downstream of the Site along the left bank of the river are plotted; those samples located adjacent to the Site are indicated on each graph. Each of the sample locations plotted on Figure 8 and listed on Table 4 can also be found on the sample location map, Figure 7. The plots are oriented with upstream samples to the right and downstream samples to the left on each graph.

Beginning with Figures 8.1 and 8.2, the total LPAH and HPAH concentrations of the samples adjacent to the Site have significantly lower concentrations than the samples obtained upstream and downstream of the Site. The total LPAH and HPAH concentrations of the samples adjacent to the Site are all well below the overall mean concentration of all of the Portland Harbor LWG surface samples, and most are below the median concentration of the LWG Harbor-wide surface samples. The mean and median concentrations for all of the LWG surface samples were obtained from Table 4.1 in the Round 2A Sediment Site Characterization Summary Report (Integral, 2005).

The arsenic concentrations on Figure 8.3 are generally about the same as the upstream and downstream samples. The arsenic concentrations for the samples adjacent to the Site are below the LWG overall harbor-wide mean of 4.2 mg/kg in half the samples and are above the harbor-wide median of 3.7 mg/kg in six of eight samples. It should be noted that arsenic concentrations for the site and upstream and downstream samples are all in a fairly consistent narrow range of concentrations between 1.9 to 5.4 mg/kg.

Chromium concentrations on Figure 8.4 are generally at or lower than the upstream and downstream samples. The chromium concentrations for the samples adjacent to the Site are typically above the LWG overall harbor-wide mean of 32 mg/kg and the harbor-wide median of 31 mg/kg consistent with both upstream and downstream sample results.

The copper concentrations on Figure 8.5 are generally lower than the upstream samples, and about the same as the downstream samples. The copper concentrations for the samples adjacent to the Site are all below the LWG overall harbor-wide mean of 53.8 mg/kg, and four of the samples are below the harbor-wide median of 39.1 mg/kg.

The zinc concentrations plotted on Figure 8.6 are lower than both the upstream and downstream samples and all but one sample have zinc concentrations below the overall harbor-wide mean concentration of 139 mg/kg.

The dibenzofuran concentrations plotted on Figure 8.7 are lower than both the upstream and downstream samples. All eight of the samples adjacent to the Site have concentrations well below the harbor-wide mean of 283 μg/kg, and all but three samples have dibenzofuran concentrations below the overall harbor-wide mean concentration of 4.4 mg/kg.

The 4-methylphenol concentrations on Figure 8.8 are generally lower than the upstream samples, and somewhat higher than the downstream samples. All but one of the samples adjacent to the Site have concentrations well below the harbor-wide mean of 77.9 μg/kg, and three are below the harbor-wide median of 16 μg/kg.

The butylbenzyl and di-n-octy phthalate concentrations of samples adjacent to the Site were mostly below detection limits, and the few detections were all well below the harbor-wide median concentrations.

Figure 8.11 shows that total PCB was detected in all of the LWG surface sediment samples tested between river miles 7.5 and 8.5. The concentrations measured in samples adjacent to the Site were all well below the harbor-wide mean 216 µg/kg, and all but three of the samples were below the harbor-wide median of 29 µg/kg. Eight of the ten samples obtained upstream of the Site had concentrations exceeding the harbor-wide median, and two of the samples exceeded the harbor-wide mean. Three of the seven samples downstream of the Site had concentrations exceeding the harbor-wide median and one sample exceeded the harbor-wide mean.

5.1.2 Risk-Based Screening of Bulk Sediment Concentrations

The sediment samples listed above were compared to risk-based screening levels to determine whether and to what extent the sediments adjacent to the Site may be toxic to aquatic organisms. Because risk-based sediment quality criteria are still under review and development for the Portland Harbor, several different screening levels were considered in this analysis to provide a consensus-based approach to the screening evaluation.

- **Windward et al. 2006 (Draft).** These draft sediment quality guidelines, developed using bioassay testing results for the Portland Harbor, are still undergoing agency review. The biological endpoints considered were *Chironomus* growth, *Chironomus* mortality, a pooled *Chironomus* endpoint, and *Hyalella* mortality. The *Hyalella* growth and pooled *Hyalella* endpoints were not used because they showed inferior performance and reliability, and weak or no correlation with contaminant concentrations. The lowest and second lowest of the Level 1 Floating Percentile Method (FPM) values were preferentially used in this analysis. If FPM values were not available for certain constituents, Apparent Effects Threshold (AET) values were used as secondary guidelines.
- **WDOE 2003**. The Washington State Department of Ecology (WDOE) developed preliminary freshwater sediment quality guidelines. The biological endpoints considered in this analysis were *Chironomus* growth, *Chironomus* mortality, and *Hyalella* mortality. The Microtox endpoint was not used because it has questionable relevance to ecological receptors, and because EPA excluded Microtox bioassays from the development of sediment quality criteria in the Commencement Bay Superfund Site. The lowest and second lowest freshwater

AET values (LAET and 2LAET, respectively) from this recent WDOE study are listed in Table 4.

- **McDonald et al. 2000.** The consensus-based PEC from this study were also used to evaluate LWG data. The PEC values represent a compilation of existing literature values for sediment quality criteria from various regions of the USA and Canada. Threshold Effects Concentrations (TEC) were not used because they exhibit unreasonably high false positive error rates and low reliability (Windward et al. 2006).

The three sets of screening criteria are listed in Table 4. All of the criteria are in reasonably good agreement with each other, although the PEC values for several metals (chromium, copper, and zinc) are somewhat lower than the other guidelines. The lowest and most stringent of all criteria are indicated in the table.

None of the sediments adjacent to MOCC and GWCC exceed any of the listed sediment quality guidelines. In fact, many of the sediment concentrations are one to two orders of magnitude lower than the guidelines. Based on this analysis, Site sediments would not be expected to cause toxicity to benthic organisms. This prediction is confirmed by the results of sediment bioassay tests, as discussed below.

5.2 Sediment Toxicity

This section discusses the results of bioassay testing of river sediment samples obtained near the Site. LWG conducted bioassay tests on sediment samples G401, G403, and G413. In summary, none of the three samples showed any significant biological effects to *Chironomus* growth or survival or *Hyalella* survival, and therefore there is no indication that these sediments exhibit toxicity to benthic invertebrates or to the invertebrate prey base of upper level organisms such as salmonids.

Below is a brief description of the freshwater bioassay performance standards and endpoints used in the biological testing program.

- **Freshwater Amphipod Bioassay.** This bioassay measures the survival of amphipods (*Hyalella azteca*) after a 28-day exposure to the test sediment. Although this bioassay also has a growth endpoint, the growth endpoint was shown to respond primarily to

the physical characteristics of the sediment (e.g., percent fines and ammonia) and to have low reliability in predicting toxicity (Windward et al. 2006); therefore, this endpoint was not included in the analysis.
- **Freshwater Midge Bioassay.** This test measures the survival and growth of the midge *Chironomus tentans* after a 10-day exposure to the test sediment.

The response of bioassay organisms exposed to the tested material representing each sediment unit is compared to the response of these organisms in control treatments, given that freshwater reference sites are not yet available in the region. The LWG in consultation with EPA established three levels of biological effects:
- "No Effects" (Level 1): Greater than 90 percent of control survival or growth
- "Low Effects" (Level 2): Greater than 80 percent of control survival or growth
- "Moderate Effects" (Level 3): Greater than 70 percent of control survival or growth

These biological effects levels (Levels 1, 2, and 3) are based on statistically significant differences between the test sediment and control sediment as well as exceedence of the minimum difference thresholds.

The three sediment samples chosen by LWG to perform bioassays appear to be representative of the full range of PAH concentrations detected across the Site. The samples selected are G401, G403, and G413. G401 is located adjacent to Conoco/Phillips property near City stormwater outfall 022, just past the downstream boundary of the Site, as shown on Figures 6 and 7. The test results are shown on Tables 5.1, 5.2, and 5.3.

***Hyalella* Bioassay**. The *Hyallella* bioassay control had an acceptable absolute mean mortality of 1.25 percent. *Hyallella* mortality in the test sediments G401, G403, and G413 is 3.75 percent, 3.75 percent, and 1.25 percent, respectively (Table 5.1). Each test response is less than 10 percent over the control mortality, therefore, the test sediments exhibited no significant biological effects at the most stringent "No Effects" level for the *Hyalella* mortality endpoint.

***Chironomus* Bioassay**. The *Chironomus* bioassay control had an acceptable absolute mean mortality of 5 percent and an acceptable growth performance greater than 0.6 mg minimum mean weight per organism. Table 5.2 shows that each of the test sediments had less than 10 percent mortality over the control mortality and therefore the test sediments exhibited no significant biological effects at the most stringent "No Effects" level for the *Chironomus* mortality endpoint. Table 5.3 shows that each of the test sediments had less than 10 percent reduction in growth over the control sediment, and therefore the test sediments exhibited no significant biological effects at the most stringent "No Effects" level for the *Chironomus* growth endpoint.

6 UPLAND SOURCES

6.1 McCall

6.1.1 Groundwater Occurrence

On the basis of soil and bedrock samples obtained from the GeoProbe and monitoring well borings drilled during the upland RI, there are three geologic units of interest underlying the uplands at the Site. The uppermost geologic unit is dredge fill derived from the Willamette River. The dredge fill overlies river alluvium. The dredge fill was placed in the 1960s by the Port in the area where McCall later built the marine terminal above-ground tank farm. The alluvium overlies basalt bedrock. The combined thickness of the dredge fill and alluvium is approximately 75 feet, based on the depth to basalt bedrock at borings GP-41, 42, 43, and 44. Because the dredge fill and alluvial sediments both consist primarily of fine to medium sand and silt, the contact between the two units is difficult to identify in borings.

Logs from site borings have not identified a consistent lithologic boundary between the dredge fill sediments and the underlying alluvial sediments. Both units are quite sandy and contain silty-sand or silt interbeds. Although some boring logs indicate that the underlying alluvium is siltier than the dredge fill sediments, the water level data do not indicate that groundwater in the dredge fill is consistently perched on the underlying alluvium. For these reasons the dredge fill sediments and alluvial sediments are considered to be one hydrogeologic unit. For the purpose of this report the dredge fill and alluvium are termed the alluvial aquifer.

Five subsurface geologic cross sections are on Figures 6A through 6E in Appendix A. The cross sections are from the 2004 RI report. The section locations are shown on Figure 5 of this report. The sections identify the type of soil encountered in the GeoProbe and monitoring well borings. Section B-B′ on Figure 6B also shows the full thickness of the alluvial aquifer down to basalt bedrock.

On a regional basis, the Willamette River is the discharge boundary for shallow and deep groundwater. For this project we are concerned primarily with characterizing the groundwater flow system in the alluvial aquifer overlying basalt bedrock. The properties of the COIs and water quality data collected to date indicate that only groundwater in the upper portion of the alluvial aquifer has water quality impacts. The organic COIs that have been detected in site groundwater have specific gravities less than one, except the chlorinated VOCs. Therefore, we expect to encounter those light COIs in groundwater in the upper portion of the alluvial aquifer. Four borings were drilled to bedrock in the chlorinated VOC plume to look for evidence of chlorinated VOC dense non-aqueous phase liquid (DNAPL). Groundwater from those borings was tested for chlorinated VOCs from multiple depths down to bedrock. No evidence of DNAPL was detected. The results from those borings, GP-41, 42, 43, and 44 were reported in the April 2001 Focused RI Interim Status Report.

Groundwater potentiometric surface contour maps were prepared for March and October 2002 (Figures 9 and 10, respectively). The contour patterns on these maps indicate that groundwater in the alluvial aquifer flows northeast to the Willamette River. Comparison of the groundwater elevations shown next to the monitoring wells on Figures 9 and 10 indicates that there was up to 2 feet of difference in groundwater elevation between the October dry season and March wet season conditions. The flow pattern did not change significantly from the dry to wet season in 2002.

Because most of the Site is paved, groundwater in the alluvial aquifer is recharged primarily by underflow from areas to the south (Tube Forgings) and to the west (Chevron Asphalt and Willbridge terminals). The entire facility is paved, with two exceptions. The rectangular shaped area between the Quadra Chemical facility and the McCall Marine Terminal has a gravel surface. Although it is unpaved, vehicle traffic has compacted the gravel and the resulting low permeability causes rainfall to runoff to the catch basins in this area. Stormwater from those catch basins flows to the McCall terminal oil water separator located at S-4. The area within the McCall terminal above-ground tank farm is also unpaved. Some infiltration may occur in this area, although much of the rainwater that falls into the tank farm runs off and is routed to the oil water separator at S-4. The alluvial aquifer is also temporarily recharged near the shoreline when the Willamette River rises due to daily tidal, storm, and seasonal fluctuations.

The hydraulic conductivity of the alluvial aquifer was determined by field testing at monitoring wells EX-5, MW-6, and MW-7. A time lag method was used for these tests at the suggestion of DEQ. This method uses the time lag between river level fluctuations and the river induced groundwater level fluctuations to determine the alluvial aquifer hydraulic conductivity. The data and results of the field tests were reported in the July 15, 2002 Status Report. The horizontal hydraulic conductivity values determined for the three wells were 0.005 ft/minute for MW-6, 0.003 feet/minute for EX-5, and 0.16 feet/minute for MW-7.

6.1.2 Groundwater Quality

The groundwater quality data from the first phase of the RI was provided in the April 30, 2001 Interim Status Report. That report used tables and maps to display the range of COPC concentrations that had been detected in GeoProbe groundwater grab samples and in groundwater samples from the site monitoring wells. A primary purpose of that data analysis was to use the GeoProbe groundwater quality data to identify areas where monitoring wells should be installed. Based on the GeoProbe data the supplemental RI included the installation of monitoring wells MW-6 through MW-13.

This section describes the general occurrence and concentration time trends of the primary COI groups: TPHs, PAHs, SVOCs, VOCs, and metals. When reviewing the tabulated water quality data, note that detections are shown in bold.

Total Petroleum Hydrocarbons

The data on Table 6 show that petroleum hydrocarbons have been detected at least once in every monitoring well at the site with the exception of newly installed monitoring well MW-15. The TPH detections have been in the gasoline, diesel, and heavy fuel oil ranges. The groundwater concentrations for each hydrocarbon range are generally less than one mg/l, but since RI monitoring began in 2000, wells MW-1, MW-3, MW-4, MW-7, MW-8, MW-11, MW-12, and MW-13 have had concentrations exceeding 1 mg/l.

Wells MW-11 and MW-8 have the highest TPH concentrations.

A petroleum LNAPL has been detected in the vicinity of well MW-11. Forensic testing has identified the LNAPL as a residual bunker C or diesel fuel. The LNAPL was also detected in GeoProbe borings GP-31, 45, 46, 47, 54, 55, 56, and 59 near well MW-11. The LNAPL was not detected in GeoProbe borings GP-57, 58, 60, 61, 62, and 63, which were advanced to delineate the onsite extent of the plume. The estimated footprint of the LNAPL plume on McCall property was defined using the GeoProbe boring results and the estimated boundary is shown on Figure 5. Review of the Tube Forgings UST file shows that a bunker C release occurred near the McCall property boundary with Tube Forgings. The shape and location of the LNAPL plume on McCall property, shown on Figure 5, implies that the plume extends onto the Tube Forgings property. The forensic evidence, LNAPL location, and geometry all indicate that the LNAPL is sourced from the bunker C release on Tube Forgings property.

At well MW-8, petroleum hydrocarbons were logged in sand at a depth of 30 feet below ground surface (bgs) when the well was being installed, but LNAPL has not been detected during subsequent sampling of the well. This well is adjacent to the marine terminal above-ground tank farm, so the tank farm is a potential source for the hydrocarbons detected in well MW-8. There is no record of a specific release that occurred in the northwest corner of the tank farm. However, there is a surface depression in this corner of the tank farm, several feet below the surrounding grade; the depression has been observed to pool runoff water, which could subsequently infiltrate beneath the berm of the tank farm. Documented releases in the marine terminal tank farm were identified on Table 1.

Time trends of total TPH concentrations in groundwater have been plotted for the monitoring wells and are located in Appendix A. For the oldest wells, the TPH data go back as far as 1994. These plots do not show any discernible trends (either downward or upward) in TPH groundwater concentrations over time. For most of the wells the total TPH concentrations vary within the range of 0.1 to 1 mg/l. For the newer wells, such as MW-8, the period of record is too short to draw any significant conclusions.

PAHs

The data on Table 7 shows that PAHs have been detected in all site monitoring wells. The PAHs are components of the petroleum hydrocarbons in groundwater described in the previous section. Table 7 shows that the LPAH and HPAH compounds have been individually quantified for this investigation. The table also shows the total LPAHs and HPAHs concentrations for each well at each monitoring event.

The PAH concentrations in groundwater are generally at the trace level or extremely low, with total LPAH and HPAH concentrations less than 1 µg/L at all wells except MW-6, 8, 9, and 11. The highest concentrations of PAHs are in wells MW-8 and MW-11, which is consistent with the elevated petroleum hydrocarbon detections in those wells.

Maximum and average benzo(a)pyrene (BAP) concentrations in groundwater are displayed next to the site wells on Figure 11. Benzo(a)pyrene has not been detected in all monitoring wells. The concentrations in Figure 11 are further discussed in the groundwater risk screen analysis in Section 7. For those locations where BAP was not detected, a concentration equal to one half of the method detection limit is shown as the average concentration.

Time trend plots of total LPAH and HPAH concentrations are in Appendix A. Concentrations of the LPAHs and HPAHs seemed to generally increase between the October 2001 and March 2002 events, but there was no general concentration trend from March 2002 to February 2004.

SVOCs

Four SVOCs are COIs for this Site, 3- and 4-methylphenol (co-elution), dibenzofuran, butyl benzyl phthalate, and di-n-octyl phthalate. The SVOC groundwater quality data are on Table 7.

Trace concentrations of 3-and 4-methylphenol were detected in wells EX-2, EX-3, EX-5, and MW-6. Wells MW-8 and MW-12 had concentrations between 1 and 2 µg/L and well MW-13 had a concentration of 28 µg/L. That concentration at MW-13 was measured in the first sample obtained following installation of well MW-13. The concentrations were 1.5 and 0.4 µg/L for the later March and October 2002 samples, so the 28 µg/L concentration is not considered representative.

Trace concentrations of dibenzofuran were detected in MW-8, MW-11, and MW-13.

Trace concentrations of butyl benzyl phthalate were detected in wells EX-7, MW-1, MW-5, MW-8, MW-9, and MW-10. There were no detections of di-n-octyl phthalate in groundwater.

VOCs

Table 8 shows all of the VOC groundwater quality data obtained at the site since 1994.

Two areas of chlorinated solvent groundwater contamination are shown on Figure 12. The average and maximum concentrations of representative VOC compounds are displayed at each Figure 12 well location. Those compounds are further discussed as part of the risk screen analysis presented in Section 7.

The largest area of contamination represents a plume that originates near well EX-1 in the former solvent drumming area and extends downgradient to wells MW-7 and MW-8 near the river. The plume trend and geometry is consistent with a source area near EX-1 and a northerly groundwater flow direction. The location of the plume boundary is estimated from the groundwater quality data from the monitoring wells and GeoProbe groundwater grab samples. The GeoProbe data are also in Table 8. The VOC compounds and concentrations that occur in the downgradient wells near the river are consistent with the degradation products that would be expected from breakdown of the VOC compounds in wells EX-1 and MW-6.

The second area of contamination includes monitoring wells MW-1, 2, 3, 4, and 10. This area of contamination may be a plume that has developed from a single source, or it may represent commingled plumes from multiple sources. The combination of VOC compounds at each well, their concentration, and the well locations suggest that more than one source, including an off-site source, may be involved. The VOCs at MW-10 may be sourced from offsite because MW-10 is located upgradient of any known on-site source areas. PCE has not been detected at well MW-10, but is present in wells MW-1 and MW-2, suggesting that the contamination at MW-10 is from a different source. The concentrations and types of VOC compounds at MW-3 and MW-4 suggest that they are degradation products of the VOCs that are found in wells MW-1 and MW-2.

BTEX compounds were also detected at very low concentrations in well MW-11. Other than a few trace level detections of toluene at monitoring wells EX-3, MW-1, MW-7, and MW-12, this monitoring well is the only one on site with detections of BTEX compounds, another indication that the LNAPL at this location is sourced from off site.

Metals

Monitoring wells MW-1, 2, 3, 4, and 5 were installed in 1993 as part of the 1993 cleanup of the former CCA formulation facility that operated from 1984 to 1986 at the Chemax portion of the former Great Western Chemical Corporation. That cleanup was reported in the *Great Western Chemical Company, Technical Center Facility, 5700 NW Front Avenue, Portland, Oregon Soil Cleanup and Groundwater Monitoring Report*, prepared for Great Western Chemical Company, March 31, 1994, by EMCON Northwest, Inc. That report was also provided to DEQ as Appendix L to the Preliminary Assessment of McCall Oil and Chemical Company and Great Western Chemical Company, NW Front Avenue Properties, Portland, Oregon, ECSI ID #134, Volume 3, by EMCON Northwest, Inc., April 5, 1994.

For the first three groundwater RI sampling events, monitoring wells MW-1, 2, 3, 4, 6, 7, and 8 were tested for arsenic, chromium, and copper to determine the extent and concentration of residual CCA components remaining in groundwater near the former CCA facility. The metals data are on Table 9. Both total and dissolved metals concentrations were measured. All of the wells tested had detections of all three CCA compounds in total and dissolved forms. This is expected, since these metals naturally occur in shallow groundwater in Western Oregon (U.S. Geological Survey 1999). Well MW-1 had the highest average dissolved copper concentration of 280 μg/L. However, downgradient wells MW-4 and MW-7 had average dissolved copper concentrations of 0.8 and 1.0 μg/L, respectively. MW-1 also had the highest average dissolved total chromium concentration of 3.93 μg/L. Well MW-3 had the highest average dissolved arsenic concentration of 43.9 μg/L. Downgradient well MW-4 had an average dissolved arsenic concentration of 13.1 μg/L.

For the fourth groundwater monitoring event (February, 2004) DEQ requested that additional wells be tested for arsenic to help determine arsenic background concentrations. For that sampling round groundwater from the following additional wells was tested for total and dissolved arsenic: EX-1, EX-2, EX-3, EX-7, MW-5, MW-9, 10, 12, 14, and 15.

6.1.3 Stormwater and Catch Basin Sediment Quality

The stormwater quality and sediment quality data are summarized in the following tables. Detections are highlighted on the tables.

- Stormwater total petroleum hydrocarbons – Table 6
- Stormwater PAHs and SVOCs – Table 7
- Stormwater metals – Table 9
- Catch basin sediment total petroleum hydrocarbons – Table 10
- Catch basin sediment PAHs and SVOCs – Table 11
- Catch basin sediment metals – Table 12

The stormwater TPH data on Table 6 are somewhat inconsistent, with 1.1 mg/l gasoline detected at catch basin S-1 from the December 2000 sampling event, but no other hydrocarbons detected in S-1 in the December 2000 or March 2002 events. Gasoline was also detected at 0.13 mg/l at catch basin S-2 in the March 2002 sample, but no other hydrocarbons were detected in S-2 at that event or the December 2000 event. Gasoline and diesel were detected at outfall S-3 at 1.30 and 0.510 mg/l respectively in the 2000 event, but only diesel was detected in S-3 at 0.110 mg/l in the 2002 event. Gasoline and diesel were detected at outfall S-4 for both events; with concentrations ranging from 0.220 to 0.270 mg/l gasoline and from 0.280 to 1.30 mg/l diesel. Heavy fuel range hydrocarbons were detected at a concentration of 0.550 mg/l at S-4 in the April 2002 sample. The 10 mg/l oil and grease NPDES limit for the Quadra Chemical and McCall Oil stormwater permits were not exceeded at any of the sample points.

Very low concentrations of PAHs were detected in all of the stormwater samples tested from all four sample stations (Table 7). Very low concentrations of the SVOC target analytes 3-and 4-methylphenol, dibenzofuran, and butyl benzyl phthalate were also detected in the stormwater samples from all four sample stations. Di-n-octyl phthalate was not detected in any of the stormwater samples.

The target analyte metals were detected in all of the stormwater samples tested (Table 9). The NPDES stormwater permit limits for copper (0.1 mg/l), lead (0.4 mg/l), and zinc (0.6 mg/l) were not exceeded in any of the samples.

Gasoline, diesel, and heavy fuel oil range hydrocarbons were detected in the sediment samples obtained from catch basins S-1, 2, and 3 (Table 10). A sediment sample was not obtained for testing from station S-4, since the oil/water separator is designed to capture stormwater sediment and prevent sediment release to the river. A trace detection of heavy fuel oil range hydrocarbons was detected in the river sediment sample S3-01C.

PAHs were detected in the sediment samples obtained from stations S-1, 2, 3, and S3-01C (Table 11). All of the target SVOCs except di-n-octyl phthalate were detected in the sediment samples from catch basins S-1, 2, and 3. A trace concentration of di-n-octyl phthalate was detected in the river sediment sample from station S3-01C.

All target metal analytes were detected in the three catch basin sediment samples S-1, 2, and 3, and in the river sediment sample, S3-01C.

6.2 Front Avenue, LLP

6.2.1 Groundwater

As described in Section 6.1.2, bunker C NAPL has been mapped at Site monitoring well 11, adjacent to the Tube Forgings LLP facility. There was a historic release of bunker C from an UST on the Tube Forgings property, and the NAPL is believed to be sourced from that release. The NAPL boundaries were determined using Geoprobe borings during the RI. The boring locations and NAPL boundary are on Figure 5. The borings were also used to determine if the NAPL is migrating along potential utility backfill pathways, and no NAPL was detected outside of the plume boundaries shown on Figure 5. The bunker C NAPL is about 700 feet from the river shoreline, does not appear to be migrating, and is not believed to be a threat to the river.

6.2.2 Stormwater

There are three private stormwater outfalls on the shoreline near the boundary of Front Avenue LLP property and McCall property. These outfalls apparently receive stormwater from the three properties currently owned by Front Avenue LLP, including Glacier Northwest, Tube Forgings, and CMI Northwest. All three of these private outfalls are just upstream from LWG sediment sample location G413, as shown on Figure 6.

6.3 Willbridge Groundwater

As described in Section 4.1.3, petroleum NAPL has been discharging along groundwater and utility backfill pathways into the river near the Willbridge terminal docks since the 1970s. Conoco/Phillips and other Willbridge owners have been conducting free product recovery operations along the shoreline, particularly near City stormwater outfall 22, as shown on Figures 4 and 6.

6.4 City Portland Stormwater

As shown on Figure 6, the City of Portland operates regional stormwater outfall 22 located just downstream of the McCall/Unocal property line.

7 MCCALL RISK SCREENING EVALUATION

A risk screening evaluation has been performed as part of the Site upland RI. Of particular focus in this report are the potential for direct effects to aquatic organisms in the Willamette River, and the potential for bioaccumulative effects to humans and upper-level wildlife species that consume fish and shellfish from the river. The Site RI also included a risk screening evaluation of soil and groundwater data to identify potential concerns to upland site workers via soil and groundwater contact, inhalation of dust and volatiles, and related upland exposure pathways. Because the risk screening evaluation to upland Site workers is not relevant to river beneficial uses, it is not included in this report.

7.1 Groundwater Screen

Shoreline monitoring wells at the McCall site were screened against surface water quality criteria for protection of aquatic life in the Willamette River. Shoreline monitoring wells include EX-2, EX-3, EX-5, MW-5, MW-7, MW-8, and MW-14. These wells were sampled during several groundwater monitoring events between December 2000 and October 2004.

The quality of shoreline groundwater was screened against ambient water quality criteria for protection of aquatic life in the Willamette River, including the chronic water quality criteria presented in the Portland Harbor Joint Source Control Strategy (JSCS) augmented with updated criteria where appropriate (i.e., EPA 2003). In particular, the following screening levels were used to assess potential impacts to the Willamette River from groundwater discharges at the McCall site (see Table 13):

- **Chronic Water Quality Criteria per JSCS.** Chronic metals criteria are derived from EPA 2004 National Recommended Water Quality Criteria, adjusted to a hardness value of 25 mg/l and expressed on a dissolved basis. Criteria for two PAHs (naphthalene and acenaphthene) two phthalates (butyl benzyl phthalate and di-n-octyl phthalate), and two VOCs (trichloroethene and tetrachloroethene) are from DEQ 2004 ambient water quality criteria, and the Tier II secondary chronic value for dibenzofuran is from Oak Ridge National Laboratory (Suter and Tsao 1996).
- **Final Chronic Values for PAHs are from EPA 2003.** The most recent and comprehensive ambient water quality criteria for PAHs were developed by EPA for the ultimate purpose of developing sediment benchmarks using the equilibrium

partitioning approach. Final chronic values for all PAH constituents are provided in Table 3-4 of EPA 2003.

Following is a summary of the groundwater screening evaluation.

- **PAHs.** All PAHs are below their respective chronic water quality criteria in shoreline groundwater at the McCall site.
- **Miscellaneous SVOCs.** The miscellaneous SVOCs listed as COIs at the McCall site are all below their respective chronic water quality criteria in shoreline monitoring wells.
- **VOCs.** All VOCs are below their respective chronic water quality criteria in shoreline groundwater at the McCall site, for those constituents for which water quality criteria are available (i.e., TCE and PCE). In fact, TCE and PCE were not detected in any of the shoreline monitoring wells at the Site.
- **Metals.** All dissolved metals concentrations are below their respective chronic water quality criteria in shoreline groundwater at the Site.

In summary, none of the constituents of concern in shoreline monitoring wells at the Site were above the chronic water quality criteria in any of the monitoring events. Therefore, groundwater discharges from the Site are expected to cause no direct toxicity to aquatic life in the Willamette River.

7.2 Stormwater Screen

Stormwater quality at the Site was sampled at four locations (S-1 through S-4) covering the various operational areas of the Site between December 2000 and April 2005 (see Table 14).

Stormwater quality was screened against ambient water quality criteria, including the chronic water quality criteria as recommended in the JSCS and presented in Section 7.1 above. Although EPA guidance states it is generally inappropriate to use chronic criteria to evaluate stormwater quality, due to the variable and intermittent nature of stormwater discharges that violate the basis of exposure for these criteria (i.e., continuous 4-day average exposure concentrations are not realized in stormwater discharges) (EPA 1996), chronic criteria are nevertheless used in our screening evaluation to be consistent with the JSCS and to provide an ultra-conservative, albeit unrealistic, assessment of stormwater quality at the McCall site.

This screening evaluation also considers naturally occurring background concentrations in the Lower Columbia River basin and ambient concentrations of contaminants in urban runoff from the Portland metropolitan area. Specifically, the following criteria were included in the stormwater screening evaluation (see Table 14):

- **Background Values for Metals in Lower Columbia River Basin.** Because of the typically low hardness in Willamette River water (i.e., 25 mg/l), hardness-based water quality criteria for several metals (copper, cadmium, lead, and zinc) are below naturally occurring background concentrations. Regional background concentrations for metals in the Lower Columbia River Basin were determined by the USGS (Fuhrer et al. 1996) and subsequently acknowledged in DEQ guidance (DEQ 2002).
- **Portland Ambient Urban Runoff Concentrations.** Metals and PAHs are common contaminants in urban runoff. For comparison purposes, mean concentrations of these constituents were calculated for the Portland metropolitan area using the City of Portland Bureau of Environmental Services database (dated January 30, 2004). Mean metals concentrations were calculated using monitoring data from a variety of urban land uses (i.e., residential, commercial, industrial, and transportation corridors) between 1991 and 2003. PAH data in the BES database are sparse. Mean PAH concentrations were calculated from stormwater influent to infiltration sumps sampled for the Underground Injection Control program. The City of Portland used a higher detection limit (0.1 μg/L) compared to the McCall data (0.01 μg/L), so several of the PAH constituents in the municipal data set are "censored" and mean concentrations could only be calculated for those constituents that had detected concentrations.
- **NPDES Stormwater Permit Limits.** McCall's stormwater discharges are currently regulated under the DEQ 1200-Z industrial stormwater permit. This permit contains water quality benchmarks for total copper, lead, and zinc.

Following is a summary of the stormwater screening evaluation.

- **PAHs.** All PAHs are below their respective chronic water quality criteria in stormwater at the McCall site, often one or more orders of magnitude below these criteria. In addition, the mean concentration of PAHs in McCall stormwater is similar to, if not better than, typical urban runoff in the Portland metropolitan area, including runoff not only from other industrial sites but also from lower impact land uses.
- **Miscellaneous (SVOCs.** The miscellaneous SVOCs listed as COIs at the McCall site are all below their respective chronic water quality criteria in stormwater at the Site, often one or more orders of magnitude below these criteria.
- **Metals.** Arsenic and chromium, two of the key metals of potential concern at the Site, are well below their respective chronic water quality criteria in stormwater. In a majority of cases, copper (six out of 10 samples), cadmium (three out of four samples), and lead (three out of four samples) are at or below natural background concentrations. In all cases, total copper, cadmium, lead, and zinc are lower than the mean concentrations in ambient urban runoff from the Portland metropolitan area. Copper, lead, and zinc concentrations are also well below the NPDES stormwater benchmarks for the site.

In summary, concentrations of PAHs, SVOCs, arsenic, and chromium are well below their respective chronic water quality criteria in all stormwater samples from the Site. Total copper, cadmium, and lead concentrations are near or below naturally occurring background values in a majority of samples. Zinc concentrations, although higher than background, are nevertheless lower than the mean zinc concentration in ambient urban runoff from the Portland metropolitan area, and well below the NPDES stormwater benchmark. Therefore, stormwater discharges from the Site are expected to cause negligible, if any, effects on aquatic life in the Willamette River, especially when due consideration is given to the intermittent and variable nature of stormwater discharges as well as mixing and dilution processes in the receiving water.

7.3 Bioaccumulation Screen

A key pathway of interest for the risk assessment in the Portland Harbor is the potential bioaccumulation of contaminants in fish and shellfish and subsequent risks posed to upper-level organisms such as humans that eat fish from the harbor, piscivorous birds and mammals, and risks to the fish themselves resulting from the body burden of contaminants in their tissues. It is well recognized in agency guidance that the assessment of bioaccumulation pathways must take into account appropriate scales of exposure in time and space (EPA 1991; EPA 2006).

Bioaccumulation exposures are averaged temporally over the lifetime of the fish being exposed to contaminants in the river, as well as the lifetimes of the human and wildlife receptors that are consuming fish from the river. Bioaccumulation exposures are also averaged spatially over the home range of the fish and the harvesting area of the receptors. For these reasons, application of bioaccumulation criteria at a specific point in space and/or a point in time, without consideration of these exposure scales, is inappropriate. Rather, the assessment must account for the cumulative effects of all contaminant inputs to the conditions in the receiving water body over the spatial and temporal scales of interest.

As a result, our assessment of the potential for stormwater and groundwater discharges from the McCall site to contribute substantively to bioaccumulation risk in the river is based on a comparison of average COI concentrations and flows at the site relative to other sources of contaminant loadings in and around the harbor, consistent with the key components of the "weight of evidence" evaluation described in the JSCS. In addition to average groundwater and stormwater COI concentrations from the McCall site, COI concentrations and flows are provided for municipal stormwater runoff and ambient upstream sources. Although stormwater and ambient upstream sources are expected to contribute a relatively large portion of metals and PAH loads, other industrial sources in and around the Portland Harbor may also be significant and should be incorporated as they become available. Concentration and flow data for these sources are summarized in Table 15.

Key inputs to the bioaccumulation assessment are described below:

- **McCall Stormwater Runoff Volume.** The McCall site covers 36 acres and includes roughly equal portions of pavement and gravel surfaces. A lumped runoff coefficient of 0.75 would therefore be appropriate for this site with an annual incident rainfall of 37 inches in the Portland area.

- **McCall Groundwater Discharge Volume.** The mean groundwater gradient in the shoreline area of the McCall site is 0.025 (range from 0.01 to 0.05) and the geometric mean hydraulic conductivity is 0.013 feet/minute (range from 0.003 to 0.16 feet/minute). The length of the shoreline is approximately 1,500 feet and the saturated thickness of the shallow water-bearing zone (i.e., in the fill sands overlying native alluvium) is approximately 10 feet.
- **Portland Municipal Stormwater Runoff Volume.** The City of Portland estimates 44,000 acres drains directly to the Willamette River in the metropolitan area, not including the tributary inputs from Johnson, Tryon, or Fanno Creeks, or the Columbia Slough (City of Portland 2004). An estimated 40 percent of this urban watershed (i.e., 17,600 acres) is covered by impervious surfaces. Our estimate of municipal stormwater runoff is based on the impervious surfaces only with an assumed runoff coefficient of 0.75.
- **Mean Annual Willamette River Discharge**. The mean annual discharge in the Willamette River from 1973 to the present is about 33,000 cfs, according to the U.S. Geological Survey (USGS) Portland gage #14211720 (http://waterdata.usgs.gov/nwis).
- **Stormwater, Groundwater, and River Concentrations.** Mean groundwater and stormwater concentrations at the Site are presented in Tables 13 and 14, respectively. Mean concentrations in Portland municipal stormwater from a variety of land uses (residential, commercial, industrial, and transportation) were calculated from the BES stormwater database (dated January 30, 2004). Ambient background concentrations of metals in the Lower Columbia River Basin are from the USGS (Fuhrer et al. 1996).

The results of the bioaccumulation assessment are described below.

- **Metals**. Naturally occurring volcanic soils in western Oregon contribute significant quantities of background metals to the Willamette River via erosion and runoff which are transported to the Portland Harbor at the base of the watershed. In addition, significant quantities of metals are conveyed in urban runoff from vehicle wear and exhaust, dry deposition on impervious surfaces, and various other urban sources. By comparison, the loadings from the Site are insignificant.

- **PAHs.** Significant quantities of PAHs are conveyed in urban runoff from vehicle exhaust, oil pan drippings, petroleum handling and spills in the drainages, deposition of particulate air pollutants, and various other urban sources. By comparison, the loadings from the Site are insignificant. Moreover, this does not account for other sources of PAHs to the harbor, in particular natural sources (e.g., forest fires, erosion of coal deposits), direct inputs from vessel traffic and marinas, combined sewer overflows, and discharges from other less-controlled industrial sites.

In summary, the total loadings of metals and PAHs from stormwater and groundwater at the Site would be negligible compared to other sources in and around the harbor, and thus McCall discharges provide an insignificant contribution to bioaccumulation risk in the Willamette River.

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TABLES

Table 1

McCall Oil & Chemical Corporation
Summary of Historical Spill Releases – McCall

Spill No.	Dates	Material Released	Location	
1	1955-80	Medium cure (MC) products (containing kerosene distillates); Rapid cure (RC) products (containing petroleum naphthalene); stove oil; all used to manufacture asphalt cold-patch.	Douglas Asphalt Plant	Approximately 4 or 5 spill incidents involving 4,000 to 10,000 gallons per incident occurred in this area prior to the construction of the lube oil tank farm in 1982. Typically, the spilled product was recovered to the extent practicable, and the waste materials would be collected in 55-gallon metal drums and sent to St. John's Landfill.
2	Mid-1960's	MC-250; MC-products contain kerosene distillates; MC-250 is 25% stove oil and 75% paving-grade asphalt.	Douglas Asphalt Plant	Operator error during the routine transfer of MC-250 resulted in the release of approximately 8,000 to 10,000 gallons of MC-250 into the aboveground storage tank containment area at the Douglas MC plant. The MC-250 remained a homogeneous mixture as it quickly cooled and hardened. The usable material was recovered using jackhammers and shovels. Unusable spilled material was sent to the St. John's Landfill.
3	Mid-1970's	Oil and water	Marine Terminal Slop Tank	The slop tank valve was inadvertently left open and an unknown quantity of oil and water was released into the Willamette River.
4	1982	Lube oil	McCall Lube Oil Plant	The lube oil plant was constructed in 1982. During construction, a lube oil spill occurred resulting in the release of an unknown quantity of lube oil into the aboveground storage tank area. Lube oil was recovered to the extent practical using a vacuum truck.
5	1955-80	Re-refined oil	Marine Terminal Tanks 10 and 7	The re-refined oil line between tanks 7 and 10 in the McCall Terminal leaked as a hose was disconnected from a product-transfer truck, resulting in the release of a small quantity (<25 gallons) of oil onto the surrounding soil. All visibly stained soil was excavated and disposed in an off-site landfill. The oil was nearly solid at ambient temperature.

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Table 1

McCall Oil & Chemical Corporation
Summary of Historical Spill Releases – McCall

Spill No.	Dates	Material Released	Location	
6	Mid-1970's	Asphalt	Marine Dock	
7	Early-1980's	Bunker Fuel	Marine Terminal Tank 6	The bunker fuel tank (Tank 6) at the McCall Terminal was overfilled, resulting in the release of approximately 100 gallons of bunker fuel onto the surrounding soil. The spill was immediately cleaned up and all visibly stained soil was excavated and disposed at Hillsboro landfill.
8	1984	Bunker Fuel (#6 fuel oil, marine fuel or industrial fuel oil)	Asphalt Plant Tank 20	Approximately 800 barrels of bunker fuel was released at the McCall asphalt plant due to a tank manhole cover left open during tank filling operations. The Oregon DEQ was notified and cleanup operation were conducted by Environmental Pacific.
9	1985	Caustic soda	Asphalt Plant	Tanker truck at the former loading rack (currently the asphalt loading rack) contained caustic soda. Tanker truck overfill resulted in the release of approximately 60 gallons of caustic soda.
10	1989	Oil and water	Marine Terminal Slop Tank	The contents of the slop tank overflowed and an unknown quantity of oil and water was released onto the ground. Visibly impacted soils were removed immediately following the incident.
11	1989	Asphalt	Asphalt Plant Tank 24	Approximately 200 gallons of asphalt were inadvertently released from Tank 24. The spilled asphalt was collected using jackhammers and shovels and disposed of at an off-site landfill. Cleanup conducted by NW Field Services.
12	Unknown	Asphalt flux	Flintkote	Small shipments (i.e., 1-2 truckloads) of asphalt flux overfilled on several occasions. The quantity is estimated to be small, but occurred periodically. The material was cleaned up following each incident.
13	1991	Asphalt	Marine Dock	A hose barge burst during asphalt loading operations at the new marine dock resulting in the release of an unknown quantity of asphalt into the river.

Table 1

McCall Oil & Chemical Corporation
Summary of Historical Spill Releases – McCall

Spill No.	Dates	Material Released	Location	
14	1983	Water and emulsified asphalt	Marine Terminal	Emulsified asphalt was sprayed onto the soil berm surrounding the aboveground storage tank farm at the McCall Oil terminal to prevent berm erosion. Following the application of asphalt, rain ensued prior to the asphalt hardening, resulting in storm water discharge containing trace amounts of asphalt.
15	1991	Bunker Fuel	Asphalt Plant Railcar Loading Area	A railcar tank bleeder-valve handle was inadvertently opened during product transfer operations and approximately 20 gallons of bunker fuel was released onto the surrounding soil during a period of heavy rainfall. Absorbent pads were immediately placed on the standing water and soil impacted with bunker fuel. No subsequent soil excavation was required.
16	1975-82	Oil and Water	Marine Terminal Slop Tank	Two separate spills of diesel fuel from slop Tank 12 occurred during this period. Approximately 50 gallons of oil and water were released during each incident. While skimming the oil water separator, the operator left the skimmer unattended and overfilled a tank.
17	10/13/98	Diesel Fuel	Oil Water Separator	Oil and water Spill OERS No. 98-2471. Temporary blockage of outlet for new separator resulted in light sheen on river. Estimate less than 2 gallons of diesel.
18	11/19/99	Bunker Fuel	Rail tank car	Rail tank car overflow during offloading. Foss Environmental removed 11 drums soil and ballast. Estimated 85 gallons released.

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Table 1

McCall Oil & Chemical Corporation
Summary of Historical Spill Releases – McCall

Spill No.	Dates	Material Released	Location	
19	7/16/95	RFO Bunker Blend	Marine Terminal	A flange gasket cracked and split, allowing oil to seep by it under the pressure of the positive displacement pump. Estimated 50 gallons released and recovered.
20	1/12/90	Reclaimer motor oil	Lube tank farm area	A camlock fitting came loose during delivery pump off. Oil absorbent applied immediately. NW Field Services vacuumed standing oil, dug out oil, stained fill/absorbent. Estimated 200 gallons spilled onto area paved with asphalt and recovered.
21	8/10/90	Asphalt Mix Oil	Asphalt Plant/NW Front Avenue	Spill occurred as customer truck departed the facility. Product drained into storm drain on Front Avenue in sufficient volume to react with storm water and boil over.
22	10/4/2000	Bunker Fuel	Marine terminal near 10" flow meter	Spill occurred when the casing of a 10" flow meter failed. Pipeline pressure caused 250 to 300 gallons to spray on the ground near meter. Foss Environmental vacuum removed five 55 gallon drums of oil. Approximately 7.5 tons contaminated soil was removed and placed in a drop box for landfill disposal at ?

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Table 2

Great Western Chemical Corporation
Summary of Historical Spill Releases - GWCC

Number	Dates	Material Released	Location	Description
1	1988 or 1989?	H_2SO_4	On blacktop (drumming area)	A drum of H_2SO_4 split open. Spill was diked and cleaned up with sorbent material.
2	?	CO630 (surfactant)	Railcar loading area	Release during tank car offloading - cleaned up.
3	?	H_2SO_4	Acid tank farm	Valve apparently left open; quantity unknown, but spill contained within bermed area.
4	1987 or 1988?	H_2SO_4	Acid tank farm	Bottom of tank corroded, approximately 20,000 gallons spilled into bermed area. Acid was pumped into trucks and tanks were repaired and raised onto pads.
5	?	Rinsate	Drum rinse area	Rinsate from acid drum rinsing operations occasionally flowed onto unpaved area..
6	?	Calgon Cat-Floc	Technical Center railcar loading area	Several incidental spills, cleaned up and put into totes.
7	1990	1,1,9-Triethylamine	Portland Branch railcar loading area	Railcar leaked over the weekend in the loading area. Soil was tested by Hahn & Associates. No further action required. No detections. Amount of spill was below the reportable quantity limit.
8	1984 (?) - 1988	$CuSO_4$	$CUSO_4$ containment structure	Crack in the concrete $CuSO_4$ containment structure was discovered during decommissioning activities. Soil was overexcavated beneath the structure and soil and concrete were disposed of off-site at Chemical Waste Management hazardous waste landfill at Arlington, Oregon.
9	1984 (?) - 1989	CCA	CCA process area	A prior release was discovered in 1992 during excavation in the former CCA Process Area. Soil and concrete were excavated and confirmation samples were collected from the excavation. Concrete and soil were disposed of off-site at Chemical Waste Management hazardous waste landfill at Arlington, Oregon. Groundwater monitoring continues.
10	1/21/99	Sodium hydroxide (caustic soda)	Storage yard	Tote bin of caustic soda fell from forklift. Contents released onto asphalt pavement drainage ditch. Spill diked and fully contained; no release to land or water. All materials cleaned up. Estimated 2,000 lbs. of combined material and absorbent material.
11	4/28/93	Diesel Fuel	Parking lot	A distributor was operating a truck and backed over a stake on the RR grade, puncturing the diesel tank. Estimated 30 gallons was spilled onto asphalt-paved parking area. All materials thoroughly cleaned up – no release to land or water.

Table 2

Great Western Chemical Corporation
Summary of Historical Spill Releases - GWCC

Number	Dates	Material Released	Location	Description
12	3/26/96	Sulfuric acid	Acid loading rack	A driver was filling his tanker truck with no gauges, resulting in an overflow of product. Estimated 150-200 gallons was spilled in contained area. All materials cleaned up – no release to land or water.
13	6/24/99	Sulfuric acid	GWEM receiving dock	Drum slipped from drum pick, dropping 12-18". Drum split open; 55 gallons of product splashed onto receiving dock. Spill cleaned – no release to environment.
14	5/19/99	Sulfuric acid	GWEM warehouse	Drum slipped off the drum pick while being lifted causing release of 500 gallons of product onto floor. Spill cleaned – no release to environment.
15	4/26/00	Sulfuric acid	Tank farm	Contractor dropped pipe onto valve resulting in leakage of product onto graveled area adjacent to the truck scale. Foss Environmental excavated materials and performed confirmation sampling. Estimated release of 70 gallons.
16	8/5/98	Lacquer thinner	Warehouse	Forklift pierced bottom of drum resulting in release of approximately 25 gallons of product onto warehouse floor. Product was contained and absorbed. No release to the environment.
17	9/22/98	Sodium hypochlorite	GWEM Warehouse	A tote ruptured while being moved to the trailer. Approximately 220 gallons of product was spilled. Material was contained with absorbent. No release to the environment.
18	1/7/99	pH water	Storage yard	A hose ruptured during pumpdown of one of the pH pumps. Unknown quantity ran into the asphalt trench. Drainage valves were closed – no material reached the river. Ditch was hosed down, materials were pumped into a tote and returned to remediation tank.
19	3/1/99	Lubricoat	Tech Center loading bay	Tote overturned causing release of 200 gallons of product onto paved truck area. Sewer hole was covered immediately. Material was absorbed. No release to tank or water.
20	3/21/96	Naphtha solvent	Rail tank car	A gasket leaked while unloading a railcar. Salvaged product was pumped into recovered drums. Estimated 40 lbs released and recovered.

Table 3

Groundwater Sampling Rationale

McCall Oil and Chemical Corporation
Focused RI Workplan

Potential Source Area	Sampling Locations	Chemical Class Tested [a]	Rationale
McCall Oil & Chemical Corp.			
Diesel rack (marine terminal)	EX-2, GP-20	VOCs, SVOCs, PAHs, TPH	Downgradient of potential source of TPH/PAHs
Asphalt rack (asphalt plant)	GP-8	VOCs, SVOCs, PAHs, TPH	Downgradient of potential source of TPH/PAHs
Asphalt plant AST tank farm	GP-8, -9, -21,-28, -29, -30, -37	VOCs, SVOCs, PAHs, TPH	Downgradient of potential source of TPH/PAHs
	GP-48, -49, -50	TPH (soil only)	Evaluate extent of TPH detected at GP-9
Railcar loading/unloading facility	GP-6, -7	VOCs, SVOCs, PAHs, TPH	Downgradient of potential source of VOCs and TPH/PAHs
Marine terminal AST tank farm	GP-15 to GP-20, GP-22, -23, -24, -25, -26, -27, -34, -35, -36, EX-2, EX-3, EX-5, MW-8, -13	VOCs, SVOCs, PAHs, TPH	Document groundwater quality in AST farm and leaving site
Former Great Western Chemical Co.			
Railcar loading/unloading facility	GP-6, -7	VOCs, SVOCs, PAHs, TPH	Downgradient of potential source of VOCs and TPH/PAHs
Acid/solvent AST tank farm	EX-1, EX-6, GP-8, GP-9	VOCs, SVOCs, PAHs, TPH	Downgradient of potential source of VOCs
Drumming shed	EX-1, EX-6, GP-9, -10, -38, -39, MW-6, -7	VOCs, SVOCs, PAHs, TPH	Downgradient of potential source of VOCs
	GP-41, -42, -43, -44	VOCs	Evaluate vertical extent of contamination
Former CCA production area	EX-4 (MW-2), MW-1, -3, -4, -5	VOCs, SVOCs, PAHs, TPH	Downgradient of documented source of metals. Source has been removed.
	GP-11, -12, -13, -14, -15	VOCs, SVOCs, PAHs, TPH, Metals	
	GP-51, -52, -53	Metals	
Upgradient Off-Site Source Areas	GP-1, -2, -31, EX-7, MW-9, -10, -11, -12	VOCs, SVOCs, PAHs, TPH	Evaluate groundwater quality entering the site from upgradient sources
	GP-3, -4, -5	VOCs, SVOCs, PAHs, TPH, Metals	
	GP-32, -33, -40	VOCs, SVOCs, PAHs, TPH	
	GP-45, -46, -47	TPH	Evaluate extent of free product
	GP-54 through GP-63	Not Tested	Evaluate extent of free product

NOTE: VOCs = chlorinated VOCs; SVOCs = four semivolatile organic compounds listed in workplan; PAHs = polynuclear aromatic hydrocarbons; TPH = total petroleum hydrocarbons as diesel and oil; Metals = dissolved arsenic, chromium, and copper.

[a] List of chemicals to be tested for each chemical class is shown in QAPP (Appendix B of RI Workplan).

Table 4
LWG Round 2A Sediment Sample Results
River Miles 7.5 to 8.5
Portland, Oregon

Station ID	Approximate River Mile		Total LPAHs (ug/kg)	Total HPAHs (ug/kg)	Total PAHs (ug/kg)	Arsenic (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Zinc (mg/kg)	Dibenzofuran (ug/kg)	4-Methylphenol (ug/kg)	Butylbenzyl phthalate (ug/kg)	Di-n-octyl phthalate (ug/kg)	Total PCBs (ug/kg)	Bioassay Result[1]
G369	7.50		31	192	223	4.3	36	41	109	1.3	12	3.7 U	3 U	20	
G377	7.55		13	120	133	2.9	23	16	75	0.39	4	2.1 U	1.7 U	0.9	PASS
G374	7.60		33	218	251	4.6	35	41	110	1.2	18	5.5	2.8 U	23	
G389	7.65		1	2	3	1.9	25	16	52	0.26 U	4.4 U	2.3 U	1.8 U	2.7	CM HIT
G381	7.68		87	238	325	4.5	34	42	175	2.8	15	2.9 U	2.3 U	85	
G394	7.73		3,290	1,800	5,090	4.2	39	50	244	52	200 U	130 U	110 U	703	
G401	7.79		674	3,560	4,234	4.5	30	36	140	17	29 U	15 U	40	36	PASS
G404	7.80		225	1,020	1,245	4.2	34	40	120	12	16	2.9 U	15	27	
C532	7.81		256	546	802	5.0	37	54	170	8.5	110	15 U	12 U	141	
G391	7.82		41	188	229	4.5	41	46	126	1.9	11	4.4	2.8 U	13	
G399	7.84	McCall	359	1,900	2,259	5.4	28	32	105	5.5	26	2.5 U	2 U	25	
G403	7.88		69	143	212	3.7	15	16	72	1.1	3.9 U	2 U	1.6 U	2.4	PASS
G407	7.97		51	288	339	3.6	34	38	124	2.4	23	5.6	2.5 U	97	
G410	8.01		29	118	147	4.1	37	41	116	1.2	14	3.8 U	3 U	22	
G413	8.03		13	104	117	2.4	17	28	142	0.52	6	2.1 U	1.7 U	51	PASS
G418	8.11		31	150	181	4.2	40	46	137	1.8	> 200	6.2	3.2 U	14	
G422	8.15		229	419	648	3.8	34	40	205	5.2	38	2.8 U	2.2 U	84	
G423	8.21		22	148	170	4.4	35	46	186	1.1	17	3.6 U	2.9 U	49	
G427	8.30		74	240	314	4.1	34	48	160	3.9	21	3.3 U	2.6 U	80	
G431	8.32		490	3,600	4,090	2.9	26	75	167	14	10 U	16	4.2 U	127	
G432	8.33		565	2,550	3,115	3.8	36	81	343	19	25 U	13 U	24	590	
G434	8.35		1,420	7,200	8,620	4.1	28	47	189	11	47	13 U	11 U	245	
G437	8.40		113	553	666	3.7	27	44	157	4.4	37	2.8 U	2.3 U	56	PASS
G439	8.43		200	1,320	1,520	3.4	34	36	124	7.1	25	12	2.1 U	47	
G436	8.46		19	78	97	8.7	13	13	41	1.5	3.6 U	10	1.5 U	4.3	
Sedt. Quality Guidelines:															
LWG Lowest FPM/ AET[2]			–	–	$\boxed{22,000}$	$\boxed{23}$	>224	562	703	–	$\boxed{390}$	1,200	--	$\boxed{220}$	
LWG 2nd-Lowest FPM/ AET[2]			–	–	1,270,000	24	>224	562	1,360	–	>510	>2,800	--	300	
WDOE 2003 LAET[3]			$\boxed{6,590}$	$\boxed{31,640}$	–	31	133	619	683	$\boxed{443}$	760	$\boxed{366}$	$\boxed{201}$	354	
WDOE 2003 2LAET[3]			41,970	120,500	–	51	133	829	1,080	660	2360	980	256	394	
McDonald et al PEC[4]					22,800	33	$\boxed{111}$	$\boxed{149}$	$\boxed{459}$	–	–	–	–	676	
Harbor-wide Mean value			25,800	34,500	60,000	4.2	32	54	139	283	78	73	155	216	
Harbor-wide Median Value			149	832	1,010	3.7	31	39	109	4.4	16	12	38	29	

Notes:

(1) Includes Level 1 results for *Chironomus* mortality (CM), *Chironomus* Growth (CG), and *Hyalella* Mortality (HM) endpoints

(2) Includes lowest and second lowest Level 1 FPM/AET values for *Chironomus* mortality, *Chironomus* growth, *Chironomus* pooled, and *Hyalella* mortality endpoints; Floating Percentile Method (FPM) values are given highest priority; Apparent Effects Threshold (AET) values used if FPM values are not available Data from Windward et al. 2006 (Draft)

(3) Includes lowest and second lowest AET values for *Chironomus* mortality, *Chironomus* growth, and *Hyalella* mortality endpoints; WDOE 2003

(4) Probably Effects Concentration (PEC) from McDonald et al. 2000

Boxed value is the most stringent of the listed sediment quality values

ANCHOR

Table 5
LWG Bioassay Testing Results
McCall Oil and Chemical

Table 5.1
Results of *Hyallella azteca* Mortality Test

Bioassay Station ID	Bioassay Type	Bioassay Variable	Mean survivorship	Mean Percent Mortality
Control	HYA28	Mortality	9.875	1.25
G401	HYA28	Mortality	9.625	3.75
G403	HYA28	Mortality	9.625	3.75
G413	HYA28	Mortality	9.875	1.25

Table 5.2
Results of *Chironomus tentans* Mortality Test

Bioassay Station ID	Bioassay Type	Bioassay Variable	Mean Survivorship	Mean Percent Mortality
Control	CHR10	Mortality	9.500	5.00
G401	CHR10	Mortality	9.375	6.25
G403	CHR10	Mortality	9.125	8.75
G413	CHR10	Mortality	9.375	6.25

Table 5.3
Results of *Chironomus tentans* Growth Test

Bioassay Station ID	Bioassay Type	Bioassay Variable	Mean Growth
Control	CHR10	Growth	1.08
G401	CHR10	Growth	1.01
G403	CHR10	Growth	1.07
G413	CHR10	Growth	1.15

Table 6
TPH in Groundwater and Storm Water
McCall Oil and Chemical

Location	Date Sampled	TPH - FIQ Gasoline		TPH - FIQ Diesel		TPH - FIQ Heavy Fuel Oil	
Geoprobe Borings - Water µg/L (ppb)							
GP-1	12/11/00	100	U	100	U	250	U
GP-2	12/11/00	**130**	H	100	U	250	U
GP-3	12/11/00	**170**	H	**280**	L	250	U
GP-4	12/11/00	**2500**	H	**7100**	F	250	U
GP-5	12/11/00	**620**	H	**430**	Y	250	U
GP-6	12/14/00	100	U	100	U	250	U
GP-7	12/14/00	100	U	100	U	250	U
GP-8	12/12/00	100	U	**100**	Y	250	U
GP-9	12/12/00	100	U	**130**	Y	250	U
GP-10	12/12/00	100	U	**100**	Y	250	U
GP-11	12/12/00	100	U	**130**	Y	250	U
GP-12	12/13/00	100	U	**130**	H	250	U
GP-12 Duplicate	12/13/00	100	U	**160**	Y	250	U
GP-13	12/12/00	**110**	Z	**260**	Y	250	U
GP-14	12/13/00	100	U	100	U	250	U
GP-15	12/13/00	100	U	**2800**	F	250	U
GP-16	12/13/00	100	U	100	U	250	U
GP-17	12/13/00	100	U	100	U	250	U
GP-18	12/14/00	100	U	100	U	250	U
GP-19	12/14/00	100	U	100	U	250	U
GP-19 Duplicate	12/14/00	100	U	100	U	250	U
GP-20	12/14/00	100	U	**550**	Y	250	U
GP-21	12/12/00	100	U	**120**	Y	250	U
GP-22	02/09/01	**210**	H	**1100**	F	250	U
GP-23	02/09/01	100	U	**440**	H	250	U
GP-24	02/09/01	100	U	**270**	H	250	U
GP-25	02/09/01	100	U	**280**	H	250	U
GP-26	02/09/01	100	U	**300**	H	250	U
GP-27	02/12/01	100	U	**170**	H	250	U
GP-28	02/12/01	100	U	100	U	250	U
GP-29	02/12/01	100	U	100	U	250	U
GP-30	02/12/01	100	U	100	U	250	U
GP-30 Duplicate	02/12/01	100	U	**120**	H	250	U
GP-31	02/13/01	**1800**	H	**7600**	Y	250	U
GP-32	02/13/01	100	U	**700**	H	250	U
GP-33	02/13/01	100	U	**320**	Y	250	U
GP-34	02/13/01	**130**	H	**2100**	Y	250	U
GP-35	02/13/01	100	U	**200**	H	250	U
GP-36	02/13/01	100	U	**210**	Y	250	U
GP-37	02/14/01	100	U	100	U	250	U
GP-38	02/14/01	100	U	100	U	250	U
GP-38 Duplicate	02/14/01	100	U	100	U	250	U
GP-39	02/14/01	100	U	100	U	250	U
GP-40	02/14/01	100	U	**640**	Y	250	U
GP-45	11/14/01	**> 667**	DET	1680	~~U~~	1680	U
GP-46	11/14/01	**> 714**	DET	**38700**		**28000**	
GP-47	11/14/01	**> 250**	DET	630	U	630	U

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Table 6
TPH in Groundwater and Storm Water
McCall Oil and Chemical

Location	Date Sampled	TPH - FIQ					
		Gasoline		Diesel		Heavy Fuel Oil	
Monitoring Wells - Water µg/L (ppb)							
EX-1	09/08/94	50	U	50	U	**266**	
EX-1 Duplicate	09/08/94	5	U				
EX-1	12/30/94	50	U	50	U	**632**	
EX-1	03/29/95	50	U	50	U	**454**	
EX-1	07/14/95	50	U	50	U	200	U
EX-1	05/02/97	**167**	Y	50	U	200	U
EX-1 Duplicate	05/02/97	**188**	Y	50	U	200	U
EX-1	02/04/99	100	U	100	U	**924**	
EX-1 Duplicate	02/04/99	100	U	100	U	**814**	
EX-1	12/20/00	**990**	Z	100	U	250	U
EX-1	03/07/02	**460**	H	**280**	Y	**550**	O
EX-1	10/03/02	100	U	100	U	250	U
EX-1	02/11/04	**500**	Z	**120**	Y	250	U
EX-1 Duplicate	02/11/04	**450**	Z	**120**	Y	250	U
EX-1	10/22/04	**210**	Z	**110**	H	250	U
EX-2	09/08/94	50	U	50	U	**200**	
EX-2	12/30/94	50	U	50	U	**441**	
EX-2	03/29/95	50	U	50	U	**398**	
EX-2	07/14/95	50	U	50	U	**885**	
EX-2	05/01/97	50	U	**519**	Y	200	U
EX-2	02/04/99	10	U	10	U	**569**	
EX-2	12/20/00	100	U	100	U	250	U
EX-2	03/07/02	110	U	**170**	Y	270	U
EX-2	10/04/02	100	U	**270**	Y	**290**	O
EX-2	02/12/04	100	U	**110**	Y	250	U
EX-2	10/21/04	100	U	**160**	Y	250	U
EX-3	09/08/94	50	U	50	U	200	
EX-3 Duplicate	09/08/94	50	U	50	U	200	
EX-3	12/30/94	50	U	50	U	**474**	
EX-3	03/29/95	50	U	50	U	**226**	
EX-3	07/14/95	50	U	50	U	200	U
EX-3	05/01/97	50	U	**64**	Y	200	U
EX-3	02/04/99	100	U	100	U	**564**	
EX-3	12/20/00	**690**	Z	100	U	250	U
EX-3	03/07/02	110	U	**110**	Y	270	U
EX-3	10/04/02	100	U	**120**	Y	250	U
EX-3	02/12/04	100	U	100	U	250	U
EX-3	10/21/04	100	U	100	U	250	U

Table 6
TPH in Groundwater and Storm Water
McCall Oil and Chemical

Location	Date Sampled	TPH - FIQ Gasoline		Diesel		Heavy Fuel Oil	
EX-4/MW-2	09/08/94	50	U	50	U	200	
EX-4/MW-2	12/30/94	50	U	1000	U	**3840**	
EX-4/MW-2	03/29/95	50	U	**2140**		200	U
EX-4/MW-2	07/14/95	50	U	**343**		200	U
EX-4/MW-2 Duplic	07/14/95	50	U	50	U	200	U
EX-4/MW-2	05/01/97	50	U	**1310**	Y	200	U
EX-4/MW-2	02/03/99	100	U	**787**	Y	250	U
EX-4/MW-2	12/20/00	**640**	Z	100	U	250	U
EX-4/MW-2	03/07/02	**160**	H	**920**	Y	**290**	O
EX-4/MW-2	10/03/02	**150**	H	**980**	Y	250	U
EX-4/MW-2	02/13/04	**120**	H	**920**	Y	**280**	O
EX-4/MW-2	10/22/04	**240**	H	**1700**	Y	**610**	L
EX-5	12/30/94	50	U	50	U	**1400**	
EX-5	03/29/95	50	U	50	U	**639**	
EX-5 Duplicate	03/29/95	50	U	50	U	**767**	
EX-5	07/14/95	50	U	**1500**		200	U
EX-5	05/01/97	50	U	50	U	200	U
EX-5 Duplicate	05/01/97	50	U	50	U	200	U
EX-5	02/04/99	100	U	**573**	Y	250	U
EX-5 Duplicate	02/04/99	100	U	**550**	Y	250	U
EX-5	12/20/00	**950**	Z	100	U	250	U
EX-5	03/07/02	100	U	**140**	Y	250	U
EX-5	10/04/02	100	U	**120**	Y	**270**	O
EX-6	12/30/94	50	U	50	U	**842**	
EX-6 Duplicate	12/30/94	50	U	50	U	**851**	
EX-6	03/29/95	50	U	50	U	**1160**	
EX-6	07/14/95	50	U	50	U	200	U
EX-6	05/02/97	50	U	50	U	**1450**	
EX-6	02/04/99	100	U	**1280**	Y	250	U
EX-7	12/30/94	50	U	50	U	200	U
EX-7	03/29/95	50	U	50	U	200	U
EX-7	07/14/95	50	U	50	U	200	U
EX-7	05/02/97	50	U	50	U	200	U
EX-7	02/03/99	100	U	250	U	250	U
EX-7	12/20/00	**530**	Z	100	U	250	U
EX-7	03/06/02	100	U	100	U	250	U
EX-7	10/03/02	100	U	100	U	250	U
EX-7	02/13/04	100	U	100	U	250	U
EX-7	10/21/04	100	U	100	U	250	U
EX-7 Duplicate	10/21/04	100	U	100	U	**270**	O

ANCHOR ENVIRONMENTAL, L.L.C.

Table 6
TPH in Groundwater and Storm Water
McCall Oil and Chemical

Location	Date Sampled	TPH - FIQ					
		Gasoline		Diesel		Heavy Fuel Oil	
MW-1	05/01/97	50	U	319	Y	200	U
MW-1	02/03/99	100	U	250	U	250	U
MW-1	12/20/00	1200	Z	100	U	250	U
MW-1	03/07/02	100	U	110	Y	250	U
MW-1	10/03/02	100	U	220	Y	250	U
MW-1	02/11/04	100	U	120	Y	250	U
MW-1	10/22/04	100	U	300	Y	320	L
MW-1 Duplicate	10/22/04	100	U	270	Y	320	L
MW-3	05/01/97	50	U	1430	Y	200	U
MW-3	02/03/99	100	U	1190	Y	250	U
MW-3	12/20/00	720	Z	100	U	250	U
MW-3 Duplicate	03/07/02	240	H	1000	Y	390	O
MW-3	03/07/02	220	H	1000	Y	410	O
MW-3	10/03/02	320	H	3000	Y	520	L
MW-3	02/11/04	300	H	2000	Y	250	U
MW-3	10/22/04	150	H	2400	Y	540	L
MW-4	05/01/97	50	U	312	Y	200	U
MW-4	02/03/99	100	U	716	Y	250	U
MW-4	12/20/00	100	U	100	U	250	U
MW-4	03/07/02	180	H	870	Y	350	O
MW-4	10/03/02	170	H	1200	Y	250	U
MW-5	05/01/97	50	U	204	Y	200	U
MW-5	02/03/99	100	U	391	Y	250	U
MW-5	12/20/00	100	U	100	U	250	U
MW-5	03/07/02	100	U	310	Y	260	O
MW-5	10/03/02	100	U	280	Y	250	U
MW-5 Duplicate	10/03/02	100	U	310	Y	250	U
MW-5	02/11/04	100	U	290	Y	250	U
MW-5	10/22/04	100	U	540	Y	330	L
MW-6	10/25/01	250	U	630	U	630	U
MW-6 Duplicate	10/25/01	250	U	630	U	630	U
MW-6	03/08/02	160	Z	240	Y	500	O
MW-6	10/03/02	100	U	280	Y	350	L
MW-6 Duplicate	10/03/02	100	U	230	Y	270	L
MW-6	02/12/04	100	U	130	Y	250	U
MW-6	10/21/04	100	U	210	Y	250	U
MW-7	10/25/01	250	U	630	U	630	U
MW-7	03/08/02	110	U	1500	Y	4000	O
MW-7	10/04/02	160	H	1100	Y	820	O
MW-7	02/12/04	100	U	240	Y	250	U
MW-7 Duplictate	02/12/04	100	U	240	Y	250	U
MW-7	10/21/04	100	U	430	Y	250	U

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Table 6
TPH in Groundwater and Storm Water
McCall Oil and Chemical

Location	Date Sampled	TPH - FIQ					
		Gasoline		Diesel		Heavy Fuel Oil	
MW-8	10/25/01	250	U	3090		1840	
MW-8	03/07/02	650	H	20000	Y	9200	O
MW-8	10/04/02	1100	H	35000	DY	23000	DO
MW-8	02/12/04	100	U	330	Y	250	U
MW-8	10/21/04	100	U	1300	Y	830	O
MW-9	01/22/02	140	H	480	Y	310	O
MW-9	03/06/02	200	H	520	Y	300	U
MW-9 Duplicate	03/06/02	210	H	600	Y	290	U
MW-9	10/03/02	150	H	850	Y	250	U
MW-9	02/13/04	100	U	300	Y	250	U
MW-9	10/22/04	130	H	1100	Y	510	L
MW-10	01/22/02	100	U	250	Y	510	O
MW-10	03/06/02	110	U	170	Y	320	O
MW-10	10/03/02	100	U	170	Y	250	U
MW-10	02/13/04	100	U	370	Y	250	U
MW-10	10/21/04	100	U	650	Y	310	L
MW-11	01/22/02	1900	H	15000	Y	4300	O
MW-11	03/08/02	1700	H	11000	Y	2600	O
MW-12	01/22/02	110	H	630	Y	1000	O
MW-12	03/06/02	150	H	1100	Y	1900	O
MW-12	10/04/02	100	U	570	Y	660	O
MW-12	02/13/04	100	U	340	Y	250	U
MW-12	10/21/04	100	U	360	Y	410	O
MW-13	01/22/02	300	H	1000	Y	2300	O
MW-13 Duplicate	01/22/02	360	H	1300	Y	2900	O
MW-13	03/06/02	150	H	710	Y	1500	O
MW-13	10/04/02	150	Z	650	Y	1300	O
MW-14	02/12/04	100	U	300	Y	250	U
MW-14	10/21/04	100	U	430	Y	280	L
MW-15	02/12/04	100	U	100	U	250	U
MW-15	10/22/04	100	U	110	H	250	U

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Table 6
TPH in Groundwater and Storm Water
McCall Oil and Chemical

Location	Date Sampled	TPH - FIQ					
		Gasoline		Diesel		Heavy Fuel Oil	
Catch Basins - Storm Water µg/L (ppb)							
S-1W	12/20/00	**1,100**	Z	100	U	250	U
S-1W	03/06/02	110	U	110	U	270	U
S-1W	04/07/05	100	U	**340**	H	**880**	O
S-2W	12/20/00	100	U	100	U	250	U
S-2W	03/06/02	**130**	Z	110	U	260	U
S-2W	04/07/05	100	U	**310**	Y	**430**	O
S-3W	02/15/01	**1,300**	Z	**510**	Z	250	U
S-3W	03/06/02	110	U	**110**	Z	260	U
S-3W	04/07/05	**120**	Z	**550**	Y	**1,000**	O
Oil/Water Separator - Storm Water							
S-4W	02/15/01	**270**	Z	**280**	Z	250	U
S-4W Duplicate	02/15/01	**260**	Z	**300**	Z	250	U
S-4W	04/09/02	**220**	H	**1,300**	F	**550**	O
S-4W	04/07/05	100	U	**440**	Y	**340**	L

Notes: U = Not detected at method reporting limit. F = The fingerprint of the sample matches the elution pattern of calibration standard
L = The fingerprint resembles a petroleum product, but the elution pattern indicates the presence of lighter weight constituents.
H = The fingerprint resembles a petroleum product, but the elution pattern indicates the presence of heavier weight constituents.
O = The fingerprint resembles oil, but does not match the calibration standard.
Y = The fingerprint resembles a petroleum product in the correct carbon range, but the elution pattern does not match the calibration standard.
Z = The fingerprint does not resemble a petroleum product.
DET= Detected above method reporting limit (method reporting limit shown)
D = The reported result is from a dilution.

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TABLE 7
PAHs and SVOCs (μg/L)
Groundwater and Stormwater
McCall Oil and Chemical

Sample Designation	EX-1		EX-1		EX-1		EX-2		EX-2		EX-2		EX-2		EX-2		EX-3	
Matrix	Water		Water		Water		Water		Water		Water		Water		Water		Water	
Date Sampled	12/20/00		03/07/02		10/03/02		12/20/00		03/07/02		10/04/02		02/12/04		10/21/04		12/20/00	
	Groundwater																	
LPAHs																		
Naphthalene	0.008	U	0.013	U	0.028	J	0.01	J	0.013	U	0.022	J	0.023	J	0.012	U	0.02	J
Acenaphthylene	0.006	U	0.011	U	0.011	U	0.01	U	0.011	U	0.011	U	0.011	U	0.011	U	0.01	U
Acenaphthene	0.007	U	0.009	U	0.009	U	0.02	J	0.041	J	0.110	J	0.025	J	0.037	J	0.01	J
Fluorene	0.006	U	0.013	U	0.012	U	0.01	U	0.013	U	0.012	U	0.012	U	0.012	U	0.01	U
Phenanthrene	0.010	J	0.038	J	0.028	J	0.04	J	0.047	J	0.057	J	0.039	J	0.021	J	0.04	J
Anthracene	0.008	J	0.063	J	0.110	J	0.01	U	0.016	U	0.015	U	0.015	U	0.015	U	0.01	U
2-Methylnaphthalene	0.008	U	0.013	U	0.012	U	0.01	J	0.012	J	0.017	J	0.013	J	0.012	U	0.01	U
Total LPAH	0.018		0.101		0.166		0.078		0.100		0.206		0.100		0.058		0.07	
HPAHs																		
Fluoranthene	0.02	J	0.014	U	0.053	J	0.009	J	0.017	J	0.013	U	0.013	U	0.013	U	0.01	J
Pyrene	0.03	J	0.039	J	0.068	J	0.03	J	0.039	J	0.074	J	0.036	J	0.032	J	0.03	J
Benz(a)anthracene	0.01	J	0.013	U	0.024	J	0.007	J	0.013	U	0.012	U	0.012	U	0.012	U	0.008	J
Chrysene	0.02	J	0.015	U	0.033	J	0.007	J	0.015	U	0.014	U	0.014	U	0.014	U	0.01	J
Benzo(b)fluoranthene	0.01	J	0.021	U	0.033	J	0.006	J	0.021	U	0.020	U	0.020	U	0.020	U	0.006	J
Benzo(k)fluoranthene	0.01	J	0.021	U	0.020	U	0.006	J	0.021	U	0.020	U	0.020	U	0.020	U	0.006	J
Benzo(a)pyrene	0.02	J	0.018	U	0.051	J	0.007	J	0.017	U	0.016	U	0.016	U	0.016	U	0.007	J
Indeno(1,2,3-cd)pyrene	0.02	J	0.026	U	0.050	J	0.009	J	0.026	U	0.024	U	0.024	U	0.024	U	0.009	J
Dibenz(a,h)anthracene	0.004	U	0.03	U	0.031	U	0.005	J	0.033	U	0.031	U	0.031	U	0.031	U	0.004	U
Benzo(g,h,i)perylene	0.02	J	0.039	J	0.061	J	0.01	J	0.018	U	0.017	U	0.017	U	0.017	U	0.02	J
Total HPAHs	0.16		0.08		0.37		0.10		0.06		0.07		0.04		0.03		0.106	
SVOCs																		
3- and 4-Methylphenol Coelution	0.003	U	0.055	U	0.051	U	0.02	J	0.055	U	0.051	U	0.051	U	0.051	U	0.05	J
Dibenzofuran	0.007	U	0.015	U	0.014	U	0.007	U	0.014	U	0.014	U	0.014	U	0.014	U	0.007	U
Butyl Benzyl Phthalate	0.02	U	0.028	U	0.026	U	0.02	U	0.028	U	0.026	U	0.026	U	0.026	U	0.02	U
Di-n-octyl Phthalate	0.003	U	0.035	U	0.032	U	0.003	U	0.035	U	0.032	U	0.032	U	0.032	U	0.003	U

Sample Designation	EX-3		EX-3		EX-3		EX-3		EX-4/MW-2		EX-4/MW-2		EX-4/MW-2		EX-5		EX-5		EX-5	
Matrix	Water		Water		Water		Water		Water		Water		Water		Water		Water		Water	
Date Sampled	03/07/02		10/04/02		02/12/04		10/21/04		12/20/00		03/07/02		10/03/02		12/20/00		03/07/02		10/04/02	
	Groundwater																			
LPAHs																				
Naphthalene	0.013	U	0.038	J	0.012	U	0.012	U	0.008	U	0.014	U	0.012	U	0.009	J	0.028	J	0.022	J
Acenaphthylene	0.011	U	0.011	U	0.011	U	0.011	U	0.006	U	0.012	U	0.011	U	0.006	U	0.011	U	0.011	U
Acenaphthene	0.009	U	0.023	J	0.009	U	0.009	U	0.140		0.300		0.190	J	0.009	J	0.024	J	0.015	J
Fluorene	0.013	U	0.012	U	0.012	U	0.012	U	0.006	U	0.014	U	0.012	U	0.006	U	0.013	U	0.012	U
Phenanthrene	0.060	J	0.057	J	0.028	J	0.016	J	0.100		0.520		0.160	J	0.020	J	0.034	J	0.039	J
Anthracene	0.019	J	0.016	J	0.015	U	0.015	U	0.006	U	0.071	J	0.060	J	0.006	U	0.016	U	0.017	J
2-Methylnaphthalene	0.012	U	0.015	J	0.012	U	0.012	U	0.008	U	0.013	U	0.012	U	0.008	U	0.012	U	0.012	U
Total LPAH	0.08		0.15		0.028		0.016		0.24		0.89		0.41		0.038		0.086		0.093	
HPAHs																				
Fluoranthene	0.038	J	0.034	J	0.013	U	0.013	U	0.01	J	0.048	J	0.028	J	0.009	J	0.013	U	0.013	U
Pyrene	0.064	J	0.061	J	0.028	J	0.030	J	0.02	J	0.13	J	0.049	J	0.040	J	0.046	J	0.067	J
Benz(a)anthracene	0.013	U	0.012	U	0.012	U	0.012	U	0.007	J	0.013	U	0.012	U	0.006	J	0.013	U	0.012	U
Chrysene	0.015	U	0.014	U	0.014	U	0.014	U	0.008	J	0.016	U	0.014	U	0.008	J	0.015	U	0.014	U
Benzo(b)fluoranthene	0.021	U	0.020	U	0.020	U	0.020	U	0.006	J	0.021	U	0.020	U	0.005	U	0.021	U	0.020	U
Benzo(k)fluoranthene	0.021	U	0.020	U	0.020	U	0.020	U	0.006	J	0.021	U	0.020	U	0.003	J	0.021	U	0.020	U
Benzo(a)pyrene	0.017	U	0.016	U	0.016	U	0.016	U	0.007	J	0.018	U	0.016	U	0.006	U	0.017	U	0.016	U
Indeno(1,2,3-cd)pyrene	0.026	U	0.024	U	0.024	U	0.024	U	0.007	J	0.027	U	0.024	U	0.007	J	0.026	U	0.024	U
Dibenz(a,h)anthracene	0.033	U	0.031	U	0.031	U	0.031	U	0.004	U	0.034	U	0.031	U	0.004	U	0.033	U	0.031	U
Benzo(g,h,i)perylene	0.034	J	0.025	J	0.017	U	0.017	U	0.009	J	0.019	U	0.017	U	0.03	J	0.054	J	0.031	J
Total HPAHs	0.136		0.120		0.028		0.030		0.080		0.178		0.077		0.103		0.100		0.098	
SVOCs																				
3- and 4-Methylphenol Coelution	0.087	J	0.090	J	0.051	U	0.051	U	0.003	U	0.056	U	0.051	U	0.007	J	0.055	U	0.051	U
Dibenzofuran	0.014	U	0.014	U	0.014	U	0.014	U	0.007	U	0.015	U	0.014	U	0.007	U	0.014	U	0.014	U
Butyl Benzyl Phthalate	0.028	U	0.026	U	0.026	U	0.026	U	0.02	U	0.028	U	0.026	U	0.02	U	0.028	U	0.026	U
Di-n-octyl Phthalate	0.035	U	0.032	U	0.032	U	0.032	U	0.003	U	0.036	U	0.032	U	0.003	U	0.035	U	0.032	U

NOTE: μg/L = micrograms per liter or parts per billion. U = not detected at or above the indicated method reporting limit. J = estimated concentration. D = reported result is from a dilution.

TABLE 7
PAHs and SVOCs (µg/L)
Groundwater and Stormwater
McCall Oil and Chemical

Sample Designation / Matrix / Date Sampled	EX-7 Water 12/20/00	EX-7 Water 03/06/02	EX-7 Water 10/03/02	MW-1 Water 12/20/00	MW-1 Water 03/07/02	MW-1 Water 10/03/02	MW-3 Water 12/20/00	MW-3 Water 03/07/02	MW-3 Dup Water 03/07/02	MW-3 Water 10/03/02	MW-4 Water 12/20/00	MW-4 Water 03/07/02	MW-4 Water 10/03/02	MW-5 Water 12/20/00	MW-5 Water 03/07/02	MW-5 Water 10/03/02	MW-5 Dup Water 10/03/02	MW-5 Water 02/11/04	MW-5 Water 10/22/04
	Groundwater																		
LPAHs																			
Naphthalene	0.008 U	0.14 J	0.022 J	0.008 U	0.012 U	0.012 U	0.008 U	0.012 U	0.012 U	0.012 U	0.008 U	0.014 U	0.012 U	0.008 U	0.034 J	0.012 U	0.023	0.025 J	0.012 U
Acenaphthylene	0.006 U	0.01 U	0.011 U	0.006 U	0.011 U	0.011 U	0.006 U	0.011 U	0.011 U	0.011 U	0.006 U	0.012 U	0.011 U	0.006 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Acenaphthene	0.007 U	0.01 U	0.009 U	0.007 U	0.009 U	0.009 U	0.170	0.210	0.230	0.330	0.030 J	0.064 J	0.130 J	0.007 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U
Fluorene	0.006 U	0.01 U	0.012 U	0.006 U	0.012 U	0.014 U	0.006 U	0.012 U	0.012 U	0.012 U	0.006 U	0.014 U	0.012 U	0.006 U	0.013 U	0.012 U	0.012 U	0.012 U	0.012 U
Phenanthrene	0.007 U	0.02 J	0.015 J	0.007 U	0.011 U	0.012 U	0.130	0.180 J	0.170 J	0.270	0.060 J	0.082 J	0.086 J	0.007 U	0.011 U	0.021 J	0.021 J	0.011 U	0.011 U
Anthracene	0.006 U	0.02 J	0.038 J	0.006 U	0.015 U	0.028 J	0.020 J	0.049 J	0.055 J	0.092 J	0.010 J	0.035 J	0.046 J	0.006 U	0.016 U	0.025 J	0.022 J	0.015 U	0.015 U
2-Methylnaphthalene	0.008 U	0.01 U	0.012 U	0.008 U	0.012 U	0.012 U	0.008 U	0.012 U	0.012 U	0.012 U	0.008 U	0.013 U	0.012 U	0.008 U	0.013 U	0.012 U	0.012 U	0.012 U	0.012 U
Total LPAH	0.008	0.18	0.08	0.008	0.015	0.03	0.32	0.44	0.46	0.69	0.10	0.18	0.26	0.008	0.03	0.05	0.07	0.025	0.015
HPAHs																			
Fluoranthene	0.007 U	0.018 J	0.024 J	0.007 U	0.013 U	0.013 U	0.01 J	0.065 J	0.071 J	0.087 J	0.02 J	0.04 J	0.013 U	0.007 U	0.014 U	0.031 J	0.026 J	0.013 U	0.013 U
Pyrene	0.007 U	0.022 J	0.028 J	0.007 U	0.015 U	0.015 U	0.05 J	0.13 J	0.11 J	0.19 J	0.05 J	0.11 J	0.15 J	0.007 U	0.024 J	0.037 J	0.034 J	0.015 U	0.015 U
Benz(a)anthracene	0.005 U	0.012 U	0.012 U	0.005 U	0.012 U	0.012 U	0.008 J	0.012 U	0.024 J	0.048 J	0.01 J	0.053 J	0.038 J	0.005 U	0.013 U	0.030 J	0.012 U	0.012 U	0.012 U
Chrysene	0.006 U	0.015 U	0.014 U	0.006 U	0.014 U	0.014 U	0.009 J	0.033 J	0.030 J	0.062 J	0.02 J	0.048 J	0.054 J	0.006 U	0.015 U	0.022 J	0.014 U	0.014 U	0.014 U
Benzo(b)fluoranthene	0.005 U	0.020 U	0.020 U	0.005 U	0.020 U	0.020 U	0.006 J	0.020 U	0.020 U	0.055 J	0.01 J	0.021 U	0.044 J	0.005 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Benzo(k)fluoranthene	0.004 J	0.020 U	0.020 U	0.003 U	0.020 U	0.020 U	0.006 J	0.020 U	0.020 U	0.020 U	0.01 J	0.021 U	0.020 U	0.003 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Benzo(a)pyrene	0.006 U	0.017 U	0.019 J	0.006 U	0.016 U	0.016 U	0.007 J	0.016 U	0.016 U	0.077 J	0.01 J	0.018 U	0.043 J	0.006 U	0.018 U	0.016 U	0.016 U	0.016 U	0.016 U
Indeno(1,2,3-cd)pyrene	0.005 J	0.025 U	0.024 U	0.004 U	0.024 U	0.024 U	0.008 J	0.024 U	0.024 U	0.053 J	0.01 J	0.026 U	0.032 J	0.004 U	0.026 U	0.024 U	0.024 U	0.024 U	0.024 U
Dibenz(a,h)anthracene	0.004 U	0.031 U	0.031 U	0.004 U	0.031 U	0.031 U	0.004 U	0.031 U	0.031 U	0.031 U	0.004 U	0.033 U	0.031 U	0.004 U	0.033 U	0.031 U	0.031 U	0.031 U	0.031 U
Benzo(g,h,i)perylene	0.007 J	0.017 U	0.021 J	0.005 U	0.017 U	0.017 U	0.009 J	0.039 J	0.017 U	0.066 J	0.02 J	0.018 U	0.048 J	0.005 U	0.018 U	0.017 U	0.017 U	0.017 U	0.017 U
Total HPAHs	0.016	0.040	0.092	0.007	0.031	0.031	0.113	0.267	0.235	0.638	0.160	0.251	0.409	0.007	0.02	0.12	0.09	0.031	0.031
SVOCs																			
3- and 4-Methylphenol Coelution	0.003 U	0.052 U	0.051 U	0.003 U	0.051 U	0.051 U	0.003 U	0.051 U	0.051 U	0.051 U	0.003 U	0.056 U	0.051 U	0.003 U	0.055 U	0.051 U	0.051 U	0.051 U	0.051 U
Dibenzofuran	0.007 U	0.014 U	0.014 U	0.007 U	0.014 U	0.014 U	0.007 U	0.014 U	0.014 U	0.014 U	0.095 U	0.015 U	0.014 U	0.007 U	0.015 U	0.200 U	0.014 U	0.014 U	0.014 U
Butyl Benzyl Phthalate	0.02 U	0.041 J	0.026 U	0.02 U	0.052 J	0.026 U	0.02 U	0.026 U	0.026 U	0.026 U	0.02 U	0.028 U	0.026 U	0.02 U	0.028 U	0.048 J	0.026 U	0.026 U	0.026 U
Di-n-octyl Phthalate	0.003 U	0.033 U	0.032 U	0.003 U	0.032 U	0.032 U	0.003 U	0.032 U	0.032 U	0.032 U	0.003 U	0.035 U	0.032 U	0.003 U	0.035 U	0.014 U	0.014 U	0.032 U	0.032 U

NOTE: µg/L = micrograms per liter or parts per billion. U = not detected at or above the indicated method reporting limit. J = estimated concentration. D = reported result is from a dilution.

TABLE 7
PAHs and SVOCs (µg/L)
Groundwater and Stormwater
McCall Oil and Chemical

Sample Designation	MW-6	MW-6 Dup	MW-6	MW-6	MW-6 Dup	MW-7	MW-7	MW-7	MW-7	MW-7 Dup	MW-7	MW-8	MW-8	MW-8	MW-8	MW-8	MW-9	MW-9	MW-9 Dup	MW-9
	Groundwater																			
Matrix	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Date Sampled	10/25/01	10/25/01	03/08/02	10/03/02	10/03/02	10/25/01	03/08/02	10/04/02	02/12/04	02/12/04	10/21/04	10/25/01	03/07/02	10/04/02	02/12/04	10/21/04	01/22/02	03/06/02	03/06/02	10/03/02
LPAHs																				
Naphthalene	5.00 U	5.00 U	0.12 J	0.048 J	0.066 J	5.00 U	0.086 J	0.020 J	0.012 U	0.012 U	0.012 U	5.00 U	0.16 J	0.38	0.031 J	0.012 U	0.17 J	0.013 U	0.012 U	0.012 U
Acenaphthylene	5.00 U	5.00 U	0.04 J	0.011 U	0.011 U	5.00 U	0.025 J	0.011 U	0.011 U	0.011 U	0.011 U	5.00 U	0.01 U	0.21	0.011 U	0.011 U	0.05 J	0.110 J	0.069 J	0.011 U
Acenaphthene	5.00 U	5.00 U	0.01 U	0.009 U	0.020 J	5.00 U	0.009 U	0.009 U	0.009 U	0.045 J	0.032 J	5.00 U	0.58	0.78	0.340	0.210	0.12 J	0.120 J	0.150 J	0.250
Fluorene	5.00 U	5.00 U	0.02 J	0.012 U	0.012 U	5.00 U	0.013 U	0.012 U	0.012 U	0.012 U	0.012 U	5.00 U	0.56	0.91	0.360	0.220	0.01 U	0.013 U	0.012 U	0.012 U
Phenanthrene	5.00 U	5.00 U	0.13 J	0.039 J	0.059 J	5.00 U	0.077 J	0.034 J	0.024 J	0.036 J	0.011 U	5.00 U	1.20	1.70	0.220	0.220	0.26	0.220	0.160 J	0.200 J
Anthracene	5.00 U	5.00 U	0.05 J	0.045 J	0.049 J	5.00 U	0.039 J	0.031 J	0.019 J	0.029 J	0.015 U	5.00 U	0.10 J	0.38	0.028 J	0.015 U	0.09 J	0.098 J	0.067 J	0.079 J
2-Methylnaphthalene	5.00 U	5.00 U	0.03 J	0.012 U	0.012 U	5.00 U	0.034 J	0.012 U	0.012 U	0.012 U	0.012 U	5.00 U	0.08 J	0.16 J	0.012 U	0.002 J	0.02 J	0.012 U	0.012 U	0.012 U
Total LPAH			0.38	0.13	0.19		0.26	0.09	0.043	0.11	0.03		2.68	4.52	0.98	0.65	0.71	0.55	0.45	0.53
HPAHs																				
Fluoranthene	5.00 U	5.00 U	0.18 J	0.08 J	0.12 J	5.00 U	0.061 J	0.013 U	0.013 U	0.013 U	0.013 U	5.00 U	0.22	0.73	0.035 J	0.048 J	0.25	0.33	0.13 J	0.11 J
Pyrene	5.00 U	5.00 U	0.25	0.12 J	0.20	5.00 U	0.089 J	0.025 J	0.015 U	0.015 U	0.015 U	5.00 U	0.34	1.10	0.066 J	0.079 J	0.41	0.48	0.26	0.24
Benz(a)anthracene	5.00 U	5.00 U	0.077 J	0.033 J	0.042 J	5.00 U	0.044 J	0.012 U	0.012 U	0.012 U	0.012 U	5.00 U	0.071 J	0.390	0.012 U	0.012 U	0.18 J	0.23	0.096 J	0.075 J
Chrysene	5.00 U	5.00 U	0.087 J	0.038 J	0.052 J	5.00 U	0.045 J	0.014 U	0.014 U	0.014 U	0.014 U	5.00 U	0.16 J	0.56	0.014 U	0.014 U	0.18 J	0.24	0.10 J	0.07 J
Benzo(b)fluoranthene	5.00 U	5.00 U	0.088 J	0.037 J	0.057 J	5.00 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U	5.00 U	0.064 J	0.350	0.020 U	0.020 U	0.18 J	0.28	0.098 J	0.074 J
Benzo(k)fluoranthene	5.00 U	5.00 U	0.045 J	0.020 U	0.020 U	5.00 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U	5.00 U	0.02 U	0.13 J	0.020 U	0.020 U	0.078 J	0.096 J	0.027 J	0.033 J
Benzo(a)pyrene	5.00 U	5.00 U	0.096 J	0.028 J	0.057 J	5.00 U	0.017 U	0.016 U	0.016 U	0.016 U	0.016 U	5.00 U	0.089 J	0.360	0.016 U	0.016 U	0.19 J	0.26	0.094 J	0.077 J
Indeno(1,2,3-cd)pyrene	5.00 U	5.00 U	0.088 J	0.037 J	0.057 J	5.00 U	0.026 U	0.024 U	0.024 U	0.024 U	0.024 U	5.00 U	0.04 J	0.25	0.024 U	0.024 U	0.12 J	0.15 J	0.062 J	0.053 J
Dibenz(a,h)anthracene	5.00 U	5.00 U	0.033 U	0.031 U	0.031 U	5.00 U	0.032 U	0.031 U	0.031 U	0.031 U	0.031 U	5.00 U	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U
Benzo(g,h,i)perylene	5.00 U	5.00 U	0.09 J	0.048 J	0.071 J	5.00 U	0.099 J	0.017 U	0.017 U	0.017 U	0.017 U	5.00 U	0.057 J	0.310	0.017 U	0.017 U	0.130 J	0.16 J	0.065 J	0.071 J
Total HPAHs			1.00	0.42	0.66		0.34	0.03	0.03	0.03	0.03		1.04	4.18	0.101	0.127	1.72	2.23	0.93	0.81
SVOCs																				
3- and 4-Methylphenol Coelution	5.00 U	5.00 U	0.073 J	0.051 U	0.051 U	5.00 U	1.1	0.05 U	0.051 U	0.051 U	0.051 U	5.00 U	0.22 J	1.60	0.051 U	0.051 U	0.051 U	0.052 U	0.051 U	0.051 U
Dibenzofuran	5.00 U	5.00 U	0.015 U	0.014 U	0.014 U	5.00 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	5.00 U	0.18 J	0.014 U	0.092 J	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U
Butyl Benzyl Phthalate	5.00 U	5.00 U	0.028 U	0.026 U	0.026 U	5.00 U	0.027 U	0.026 U	0.026 U	0.026 U	0.026 U	5.00 U	0.13 J	0.026 U	0.026 U	0.026 U	0.026 U	0.050 J	0.074 J	0.026 U
Di-n-octyl Phthalate	5.00 U	5.00 U	0.035 U	0.032 U	0.032 U	5.00 U	0.034 U	0.032 U	0.032 U	0.032 U	0.032 U	5.00 U	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	0.033 U	0.032 U	0.032 U

NOTE: µg/L = micrograms per liter or parts per billion. U = not detected at or above the indicated method reporting limit. J = estimated concentration. D = reported result is from a dilution.

TABLE 7
PAHs and SVOCs (µg/L)
Groundwater and Stormwater
McCall Oil and Chemical

	Groundwater																															
Sample Designation	MW-10		MW-10		MW-10		MW-11		MW-11		MW-12		MW-12		MW-12		MW-13		MW-13 Dup		MW-13		MW-13		MW-14		MW-14		MW-15		MW-15	
Matrix	Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water	
Date Sampled	01/22/02		03/06/02		10/03/02		01/22/02		03/08/02		01/22/02		03/06/02		10/04/02		01/22/02		01/22/02		03/06/02		10/04/02		02/11/04		10/21/04		02/12/04		10/22/04	
	LPAHs																															
Naphthalene	0.058	J	0.24		0.012	U	0.012	U	0.12	U	0.11	J	0.12	J	0.012	U	0.190	J	0.25		0.24		0.10	J	0.023	J	0.012	U	0.016	J	0.012	U
Acenaphthylene	0.019	J	0.02	J	0.011	U	0.011	U	0.11	U	0.02	J	0.03	J	0.011	U	0.031	J	0.04	J	0.05	J	0.02	J	0.011	U	0.011	U	0.011	U	0.011	U
Acenaphthene	0.120	J	0.01	U	0.009	U	0.430		1.60	JD	0.19	J	0.15	J	0.250		0.087	J	0.09	J	0.18	J	0.25		0.031	J	0.009	U	0.009	U	0.009	U
Fluorene	0.012	U	0.01	U	0.012	U	0.860		2.00	D	0.01	U	0.01	U	0.012	U	0.041	J	0.03	J	0.04	J	0.01	U	0.012	U	0.012	U	0.012	U	0.012	U
Phenanthrene	0.073	J	0.08	J	0.012	J	1.800		3.00	D	0.11	J	0.11	J	0.150	J	0.110	J	0.13	J	0.19	J	0.14	J	0.011	U	0.011	U	0.011	U	0.011	U
Anthracene	0.032	J	0.03	J	0.029	J	0.410		0.66	JD	0.02	J	0.02	U	0.054	J	0.025	J	0.03	J	0.04	J	0.02	J	0.015	U	0.015	U	0.070	J	0.055	J
2-Methylnaphthalene	0.012	U	0.02	J	0.012	U	20.000	D	24.00	D	0.04	J	0.03	J	0.012	U	0.058	J	0.07	J	0.06	J	0.03	J	0.012	U	0.012	U	0.012	U	0.012	U
Total LPAH	0.30		0.39		0.04		23.50		31.26		0.48		0.44		0.45		0.54		0.65		0.80		0.56		0.054		0.015		0.086		0.055	
	HPAHs																															
Fluoranthene	0.081	J	0.10	J	0.016	J	0.43		0.38	JD	0.036	J	0.058	J	0.013	U	0.10	J	0.12	J	0.14	J	0.058	J	0.013	U	0.013	U	0.013	U	0.013	U
Pyrene	0.130	J	0.15	J	0.059	J	0.61		0.89	JD	0.076	J	0.11	J	0.10	J	0.14	J	0.19	J	0.19	J	0.11	J	0.015	U	0.015	U	0.021	J	0.024	J
Benz(a)anthracene	0.078	J	0.081	J	0.026	J	0.012	U	0.23	JD	0.012	U	0.052	J	0.012	U	0.038	J	0.053	J	0.063	J	0.012	U	0.012	U	0.012	U	0.012	U	0.012	U
Chrysene	0.084	J	0.094	J	0.017	J	0.13	J	0.50	JD	0.047	J	0.046	J	0.014	U	0.052	J	0.056	J	0.075	J	0.014	U	0.014	U	0.014	U	0.014	U	0.014	U
Benzo(b)fluoranthene	0.056	J	0.070	J	0.020	U	0.02	U	0.20	U	0.020	U	0.021	U	0.020	U	0.020	U	0.072	J	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
Benzo(k)fluoranthene	0.020	U	0.037	J	0.020	U	0.02	U	0.20	U	0.020	U	0.021	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
Benzo(a)pyrene	0.071	J	0.090	J	0.016	U	0.016	U	0.16	U	0.016	U	0.018	U	0.016	U	0.044	J	0.072	J	0.098	J	0.016	U	0.016	U	0.016	U	0.016	U	0.016	U
Indeno(1,2,3-cd)pyrene	0.024	U	0.052	J	0.024	U	0.024	U	0.24	U	0.024	U	0.026	U	0.024	U	0.024	U	0.053	J	0.082	J	0.024	U	0.024	U	0.024	U	0.024	U	0.024	U
Dibenz(a,h)anthracene	0.031	U	0.031	U	0.031	U	0.031	U	0.31	U	0.031	U	0.033	U	0.031	U	0.031	U	0.031	U	0.031	U	0.031	U	0.031	U	0.031	U	0.031	U	0.031	U
Benzo(g,h,i)perylene	0.047	J	0.061	J	0.017	U	0.017	U	0.17	U	0.017	U	0.047	J	0.017	U	0.017	U	0.072	J	0.110	J	0.021	J	0.017	U	0.017	U	0.017	U	0.017	U
Total HPAHs	0.55		0.74		0.12		1.17		2.00		0.16		0.31		0.10		0.37		0.69		0.76		0.26		0.031		0.031		0.021		0.024	
	SVOCs																															
3- and 4-Methylphenol Coelution	0.051	U	0.053	U	0.051	U	0.051	U	0.510	U	1.9		0.41	J	0.07	J	28	D	31	D	1.5		0.4	J	0.051	U	0.051	U	0.051	U	0.051	U
Dibenzofuran	0.014	U	0.014	U	0.014	U	0.014	U	0.81	JD	0.20	U	0.015	U	0.014	U	0.018	J	0.021	J	0.021	J	0.014	U	0.014	U	0.014	U	0.014	U	0.014	U
Butyl Benzyl Phthalate	0.045	J	0.040	J	0.026	U	0.026	U	0.26	U	0.20	U	0.028	U	0.026	U	0.026	U	0.026	U	0.027	U	0.026	U	0.026	U	0.026	U	0.026	U	0.026	U
Di-n-octyl Phthalate	0.032	U	0.033	U	0.032	U	0.032	U	0.32	U	0.20	U	0.035	U	0.032	U	0.032	U	0.032	U	0.034	U	0.032	U	0.032	U	0.032	U	0.032	U	0.032	U

NOTE: µg/L = micrograms per liter or parts per billion. U = not detected at or above the indicated method reporting limit. J = estimated concentration. D = reported result is from a dilution.

TABLE 7
PAHs and SVOCs (µg/L)
Groundwater and Stormwater
McCall Oil and Chemical

Sample Designation	S-1	S-1	S-1	S-2	S-2	S-2	S-3	S-3	S-3	S-4	S-4 Duplicate	S-4	S-4
	Stormwater												
Matrix	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Date Sampled	12/20/00	03/06/02	04/07/05	12/20/00	03/06/02	04/07/05	12/20/00	03/06/02	04/07/05	12/20/00	12/20/00	04/09/02	04/07/05
LPAHs													
Naphthalene	0.03 J	0.03 J	0.031 J	0.07 J	0.025 J	0.012 U	0.07 J	0.025 J	0.012 U	0.04 J	0.04 J	0.012 U	0.012 U
Acenaphthylene	0.01 J	0.01 U	0.037 J	0.02 J	0.011 U	0.026 J	0.10 U	0.011 U	0.011 U	0.10 U	0.10 U	0.011 U	0.011 U
Acenaphthene	0.02 J	0.01 U	0.009 U	0.02 J	0.009 U	0.009 U	0.10 U	0.009 U	0.009 U	0.14	0.12	0.085 J	0.009 U
Fluorene	0.02 J	0.01 U	0.026 J	0.04 J	0.013 U	0.012 U	0.02 J	0.013 U	0.012 U	0.36	0.34	0.170 J	0.012 U
Phenanthrene	0.07 J	0.03 J	0.190 J	0.25	0.043 J	0.045 J	0.20	0.054 J	0.057 J	0.46	0.35	0.073 J	0.032 J
Anthracene	0.01 U	0.02 U	0.039 J	0.02 J	0.016 U	0.015 U	0.10 U	0.015 U	0.015 U	0.02 J	0.01 J	0.015 U	0.015 U
2-Methylnaphthalene	0.03 J	0.02 J	0.012 U	0.05 J	0.014 J	0.012 U	0.10	0.012 U	0.012 U	0.09 J	0.10	0.012 U	0.012 U
Total LPAH	0.176	0.078	0.323	0.470	0.082	0.071	0.386	0.079	0.057	1.110	0.960	0.328	0.032
HPAHs													
Fluoranthene	0.02 J	0.013 U	0.230	0.099	0.022 J	0.059 J	0.06 J	0.023 J	0.040 J	0.06 J	0.05 J	0.01 U	0.01 U
Pyrene	0.02 J	0.015 U	0.280	0.12	0.025 J	0.059 J	0.03 J	0.022 J	0.037 J	0.19	0.16	0.10 J	0.10 J
Benz(a)anthracene	0.005 U	0.012 U	0.081 J	0.03 J	0.013 U	0.012 U	0.007 J	0.012 U	0.012 U	0.03 J	0.02 J	0.012 U	0.012 U
Chrysene	0.008 J	0.014 U	0.140 J	0.06 J	0.015 U	0.014 U	0.03 J	0.015 U	0.014 U	0.12	0.09 J	0.014 U	0.014 U
Benzo(b)fluoranthene	0.006 J	0.020 U	0.150 J	0.04 J	0.021 U	0.021 J	0.01 J	0.020 U	0.020 U	0.03 J	0.03 J	0.020 U	0.020 U
Benzo(k)fluoranthene	0.004 J	0.020 U	0.049 J	0.03 J	0.021 U	0.020 U	0.008 J	0.020 U	0.020 U	0.02 J	0.01 J	0.020 U	0.020 U
Benzo(a)pyrene	0.006 U	0.016 U	0.100 J	0.03 J	0.017 U	0.020 U	0.095 U	0.017 U	0.016 U	0.03 J	0.02 J	0.016 U	0.016 U
Indeno(1,2,3-cd)pyrene	0.006 J	0.024 U	0.089 J	0.04 J	0.026 U	0.020 U	0.01 J	0.025 U	0.024 U	0.02 J	0.02 J	0.024 U	0.024 U
Dibenz(a,h)anthracene	0.004 U	0.031 U	0.031 U	0.009 J	0.032 U	0.020 U	0.19 U	0.031 U	0.031 U	0.009 J	0.008 J	0.031 U	0.031 U
Benzo(g,h,i)perylene	0.007 J	0.017 U	0.140 J	0.06 J	0.018 U	0.020 U	0.01 J	0.017 U	0.017 U	0.04 J	0.03 J	0.017 U	0.017 U
Total HPAHs	0.071		1.26	0.52	0.047	0.139	0.17	0.045	0.077	0.55	0.44	0.10	0.10
SVOCs													
3- and 4-Methylphenol Coelution	0.3 J	0.23 J	0.051 U	0.49	0.089 J	0.051 U	0.48 U	0.220 J	0.120 J	0.2 J	0.2 J	0.051 U	0.051 U
Dibenzofuran	0.01 J	0.014 U	0.014 U	0.02 J	0.014 U	0.014 U	0.01 U	0.019 J	0.014 U	0.13	0.11	0.11 J	0.01 U
Butyl Benzyl Phthalate	0.1 J	0.19 J	0.20	0.1 J	0.05 J	0.076 J	0.08 J	0.092 J	0.089 J	0.05 J	0.04 J	0.14 J	0.10 J
Di-n-octyl Phthalate	0.003 U	0.032 U	0.032 U	0.003 U	0.032 U	0.11 J	0.95 U	0.033 U	0.032 U	0.95 U	0.96 U	0.032 U	0.032 U

TABLE 8
VOLATILE ORGANIC COMPOUNDS (µg/L)
GROUNDWATER
McCall Oil and Chemical

Sample Designation	Matrix	Date Sampled	Vinyl Chloride	Chloroethane	1,1-Dichloroethene	Carbon Disulfide	*trans*-1, 2-dichloroethene	1,1-Dichloroethane	*cis*-1, 2-dichloroethene	Chloroform	1,1,1-Trichloroethane	Benzene	Trichloroethene	Toluene	Tetrachloroethene	Dibromochloromethane	Ethylbenzene	m,p-Xylenes	o-Xylene	Isopropylbenzene	n-Propylbenzene	1,2,4-Trimethylbenzene	n-Butylbenzene	Naphthalene
EX-1	Water	05/02/97	0.5 U	0.5 U	1.8	0.5 U	0.5 U	4.4	9.9	5.9	240	0.5 U	410	0.5 U	3300	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-1 Duplicate	Water	05/02/97	0.5 U	0.5 U	1.7	0.5 U	0.5 U	3.9	8.3	5.2	270	0.5 U	470	0.5 U	3600	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-1	Water	02/04/99	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	120	50 U	220	50 U	2600	50 U	50 U	50 U	50 U	200 U	200 U	200 U	200 U	200 U
EX-1 Duplicate	Water	02/04/99	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	130	50 U	250	50 U	3000	50 U	50 U	50 U	50 U	200 U	200 U	200 U	200 U	200 U
EX-1	Water	12/20/00	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.53	0.5 U	0.5 U	9.1	0.5 U	20	0.5 U	400 D	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-1	Water	03/07/02	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	3.2 D	2.5 U	2.5 U	13 D	2.5 U	32 D	2.5 U	480 D	2.5 U	2.5 U	2.5 U	2.5 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
EX-1	Water	10/03/02	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	0.5 U	2.5 U	2.5 U	11	2.5 U	25	2.5 U	340 D	2.5 U	2.5 U	2.5 U	2.5 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
EX-1	Water	02/11/04	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	0.5 U	2.5 U	2.5 U	22 D	2.5 U	82 D	2.5 U	1700 D	2.5 U	2.5 U	2.5 U	2.5 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
EX-1 Duplicate	Water	02/11/04	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	0.5 U	2.5 U	2.5 U	24 D	2.5 U	89 D	2.5 U	1700 D	2.5 U	2.5 U	2.5 U	2.5 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
EX-1	Water	10/22/04	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	4.1 D	1.3 U	19 D	1.3 U	740 D	1.3 U	1.3 U	1.3 U	1.3 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
EX-2	Water	05/01/97	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-2	Water	02/04/99	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-2	Water	12/20/00	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-2	Water	10/04/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-2	Water	03/07/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-3	Water	05/01/97	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-3	Water	02/04/99	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-3	Water	12/20/00	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-3	Water	03/07/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-3	Water	10/03/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-4/MW-2	Water	05/01/97	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-4/MW-2	Water	02/03/99	0.8	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-4/MW-2	Water	12/20/00	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.1	0.5 U	0.5 U	0.5 U	0.5 U	0.65	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-4/MW-2	Water	03/07/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-4/MW-2	Water	10/03/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.8	0.5 U	0.5 U	0.5 U	0.5 U	1.3	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-4/MW-2	Water	02/13/04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-4/MW-2	Water	10/22/04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-5	Water	05/01/97	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-5	Water	05/01/97	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-5	Water	02/04/99	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-5	Water	02/04/99	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-5	Water	12/20/00	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-5	Water	03/07/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-5	Water	10/04/02	0.5 U	0.5 U	0.5 U	1.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-6	Water	05/02/97	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.0	2.9	0.5 U	0.5 U	0.5 U	2.6	0.5 U	0.7	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-6	Water	02/04/99	0.6	0.5 U	0.5 U	0.5 U	0.5 U	0.8	3.8	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

TABLE 8
VOLATILE ORGANIC COMPOUNDS (µg/L)
GROUNDWATER
McCall Oil and Chemical

Sample Designation	Matrix	Date Sampled	Vinyl Chloride	Chloroethane	1,1-Dichloroethene	Carbon Disulfide	*trans*-1, 2-dichloroethene	1,1-Dichloroethane	*cis*-1, 2-dichloroethene	Chloroform	1,1,1-Trichloroethane	Benzene	Trichloroethene	Toluene	Tetrachloroethene	Dibromochloromethane	Ethylbenzene	m,p-Xylenes	o-Xylene	Isopropylbenzene	n-Propylbenzene	1,2,4-Trimethylbenzene	n-Butylbenzene	Naphthalene
EX-7	Water	05/02/97	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-7	Water	02/03/99	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-7	Water	12/20/00	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-7	Water	03/06/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
EX-7	Water	10/03/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-1	Water	05/01/97	0.5 U	0.5 U	0.9	0.5 U	0.5 U	7.4	0.7	12.0	8.0	0.5 U	28.0	0.5 U	110	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-1	Water	02/03/99	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.8	0.5 U	0.5 U	0.5 U	0.5 U	1.7	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-1	Water	12/20/00	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.53	0.5 U	0.5 U	0.56	0.5 U	3.5	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-1	Water	03/06/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	9.7	0.5 U	0.5 U	0.5 U	0.5 U	3.2	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-1	Water	10/03/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	3.6	0.5 U	0.5 U	0.5 U	0.9	1.4	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-1	Water	02/11/04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.58	2.2	0.5 U	0.5 U	0.5 U	5.2	0.5 U	2.3	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-1	Water	10/22/04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.87	0.5 U	0.5 U	0.67	0.5 U	2.8	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-1 Duplicate	Water	10/22/04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.88	0.5 U	0.5 U	0.65	0.5 U	2.9	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-3	Water	05/01/97	5.9	0.5	0.5 U	0.5 U	0.5 U	0.6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.7 Total	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-3	Water	02/04/99	2.6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-3	Water	12/20/00	1.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-3	Water	03/07/02	2.6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-3 Duplicate	Water	03/07/02	2.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-3	Water	10/03/02	1.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-3	Water	02/11/04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-3	Water	10/22/04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-4	Water	05/01/97	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	3.5	4.9	0.5 U	0.5 U	0.5 U	8.1	0.5 U	11.0	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-4	Water	02/03/99	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.8	4.4	0.5 U	0.5 U	0.5 U	2.0	0.5 U	2.5	1.9	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-4	Water	12/20/00	1.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-4	Water	03/07/02	2.6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-4	Water	10/03/02	0.69	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.59	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-5	Water	05/01/97	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-5	Water	02/03/99	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-5	Water	12/20/00	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-5	Water	03/07/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-5	Water	10/03/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-5 Duplicate	Water	10/03/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-5	Water	02/11/04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-5	Water	10/22/04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

TABLE 8
VOLATILE ORGANIC COMPOUNDS (µg/L)
GROUNDWATER
McCall Oil and Chemical

Sample Designation	Matrix	Date Sampled	Vinyl Chloride	Chloroethane	1,1-Dichloroethene	Carbon Disulfide	*trans*-1,2-dichloroethene	1,1-Dichloroethane	*cis*-1,2-dichloroethene	Chloroform	1,1,1-Trichloroethane	Benzene	Trichloroethene	Toluene	Tetrachloroethene	Dibromochloromethane	Ethylbenzene	m,p-Xylenes	o-Xylene	Isopropylbenzene	n-Propylbenzene	1,2,4-Trimethylbenzene	n-Butylbenzene	Naphthalene
MW-6	Water	10/25/01	5 U	2.5 U	2.5 U	50 U	2.8	6.4	422	2.5 U	7.45	5 U	20.5	5 U	23	2.5 U	5 U	10 U	5 U	10.0 U	5.0 U	2.5 U	25 U	10 U
MW-6 Duplicate	Water	10/25/01	5 U	2.5 U	2.5 U	50 U	2.6	6.9	411	2.5 U	7.65	5 U	20.6	5 U	21.2	2.5 U	5 U	10 U	5 U	10.0 U	5.0 U	2.5 U	25 U	10 U
MW-6	Water	03/08/02	5.6 D	2.5 U	3.8 D	2.5 U	4.0 D	11.0 D	700 D	2.5 U	22 D	2.5 U	200 D	2.5 U	360 D	2.5 U	2.5 U	2.5 U	2.5 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
MW-6	Water	10/03/02	11.0 D	1.3 U	2.9 D	1.3 U	3.8 D	7.5 D	770 D	1.3 U	7.7 D	1.3 U	33 D	1.3 U	40 D	1.3 U	1.3 U	1.3 U	1.3 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
MW-6 Duplicate	Water	10/03/02	12.0 D	1.3 U	3.0 D	1.3 U	3.9 D	7.8 D	740 D	1.3 U	8.0 D	1.3 U	36 D	1.3 U	43 D	1.3 U	1.3 U	1.3 U	1.3 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
MW-6	Water	02/12/04	11.0 D	1.3 U	2.5 D	1.3 U	3.6 D	4.5 D	630 D	1.3 U	7.6 D	1.3 U	71 D	1.3 U	70 D	1.3 U	1.3 U	1.3 U	1.3 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
MW-6	Water	10/21/04	14.0 D	2.5 U	3.4 D	2.5 U	4.4 D	3.8 D	780 D	2.5 U	6.4 D	2.5 U	55 D	2.5 U	62 D	2.5 U	2.5 U	2.5 U	2.5 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
MW-7	Water	10/25/01	1.0 U	0.5 U	0.5 U	10.0 U	0.5 U	0.5 U	2.9	0.5 U	0.5 U	1.0 U	0.5 U	1.0 U	0.5 U	0.5 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	0.5 U	5.0 U	2.0 U
MW-7	Water	03/08/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.1	0.5 U	0.5 U	0.5 U	0.5 U	3.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-7	Water	10/04/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5	0.5 U	0.5 U	0.5 U	0.5 U	2.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-7	Water	02/12/04	1.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-7 Duplicate	Water	02/12/04	1.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-7	Water	10/21/04	0.78	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	3.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-8	Water	10/25/01	1.0 U	0.5 U	0.5 U	10.0 U	0.5 U	0.5 U	1.21	0.5 U	0.5 U	1.0 U	0.5 U	1.0 U	0.5 U	0.5 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	0.5 U	5.0 U	2.0 U
MW-8	Water	03/07/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-8	Water	10/04/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-8	Water	02/12/04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-8	Water	10/21/04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-9	Water	01/22/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-9	Water	03/06/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-9 Duplicate	Water	03/06/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-9	Water	10/03/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-10	Water	01/22/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.57	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-10	Water	03/06/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-10	Water	10/03/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.69	0.5 U	0.5 U	0.5 U	1.7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-10	Water	02/13/04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.66	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-10	Water	10/21/04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.69	0.5 U	0.5 U	0.5 U	1.7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-11	Water	01/22/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0	0.5 U	1.6	0.5 U	0.5 U	4.7	3.1	8.2	4.2	6.1	4.5	2.4	2.0 U
MW-11	Water	03/08/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.2	0.5 U	1.1	0.5 U	0.5 U	2.9	2.3	5.2	3.6	5.2	3.3	2.3	2.0 U
MW-12	Water	01/22/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-12	Water	03/06/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.52	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-12	Water	10/04/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-13	Water	01/22/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	4.8
MW-13	Water	03/06/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-13 Duplicate	Water	03/06/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-13	Water	10/04/02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

TABLE 8
VOLATILE ORGANIC COMPOUNDS (µg/L)
GROUNDWATER
McCall Oil and Chemical

Sample Designation	Matrix	Date Sampled	Vinyl Chloride	Chloroethane	1,1-Dichloroethene	Carbon Disulfide	*trans*-1, 2-dichloroethene	1,1-Dichloroethane	*cis*-1, 2-dichloroethene	Chloroform	1,1,1-Trichloroethane	Benzene	Trichloroethene	Toluene	Tetrachloroethene	Dibromochloromethane	Ethylbenzene	m,p-Xylenes	o-Xylene	Isopropylbenzene	n-Propylbenzene	1,2,4-Trimethylbenzene	n-Butylbenzene	Naphthalene
MW-14	Water	02/12/04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-14	Water	10/21/04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.0	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-15	Water	02/12/04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MW-15	Water	10/22/04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTE: µg/L = micrograms per liter or parts per billion. U = not detected at or above the indicated method reporting limit. J = estimated concentration. D = Reported result is from a dilution

Table 9
Metals
Groundwater and Stormwater
McCall Oil and Chemical

Location		Matrix	Date Sampled	Arsenic		Cadmium	Chromium		Copper
Monitoring Wells - Groundwater µg/L (ppb)									
EX-1	Total	Water	02/11/04	3.0					
EX-1 Duplicate	Total	Water	02/11/04	2.6					
EX-1	Dissolved	Water	02/11/04	1.6					
EX-1 Duplicate	Dissolved	Water	02/11/04	1.4					
EX-1	Total	Water	10/22/04	2.6					
EX-1	Dissolved	Water	10/22/04	1.9					
EX-2	Total	Water	02/11/04	57.1					
EX-2	Dissolved	Water	02/11/04	65.8					
EX-2	Total	Water	10/21/04	64.6					
EX-2	Dissolved	Water	10/21/04	72.4					
EX-3	Total	Water	02/12/04	87.2					
EX-3	Dissolved	Water	02/12/04	86.1					
EX-3	Total	Water	10/21/04	90.0					
EX-3	Dissolved	Water	10/21/04	90.2					
EX-4/MW-2	Dissolved	Water	12/20/00	8.8			8.1		2.0
EX-4/MW-2	Total	Water	03/07/02	56.8			5.8		7.7
EX-4/MW-2	Dissolved	Water	03/07/02	47.5			2.4		0.6
EX-4/MW-2	Dissolved	Water	10/03/02	14.9			0.4		2.5
EX-4/MW-2	Total	Water	02/13/04	53.1					
EX-4/MW-2	Dissolved	Water	02/13/04	55.2					
EX-4/MW-2	Total	Water	10/22/04	63.9					
EX-4/MW-2	Dissolved	Water	10/22/04	48.3					
EX-7	Total	Water	02/12/04	0.5					
EX-7	Dissolved	Water	02/12/04	0.5	U				
EX-7	Total	Water	10/21/04	0.6					
EX-7 Duplicate	Total	Water	10/21/04	0.5	U				
EX-7	Dissolved	Water	10/21/04	0.5	U				
EX-7 Duplicate	Dissolved	Water	10/21/04	0.5	U				
MW-1	Dissolved	Water	12/20/00	2.50	U		9.5		514
MW-1	Total	Water	03/07/02	0.80			1.9		139
MW-1	Dissolved	Water	03/07/02	1.00	U		2.0		130
MW-1	Dissolved	Water	10/03/02	0.8			0.3		196
MW-1	Total	Water	02/11/04	0.6			1.2		82.8
MW-1	Dissolved	Water	02/11/04	0.6			0.7		70.8
MW-1	Total	Water	10/22/04	0.9			0.2	U	242
MW-1 Duplicate	Total	Water	10/22/04	1.0			0.2	U	245
MW-1	Dissolved	Water	10/22/04	1.0			0.2	U	250
MW-1 Duplicate	Dissolved	Water	10/22/04	0.9			0.2	U	246

Table 9
Metals
Groundwater and Stormwater
McCall Oil and Chemical

Location		Matrix	Date Sampled	Arsenic	Cadmium	Chromium	Copper
MW-3	Dissolved	Water	12/20/00	39.7	0.10 U	0.4 U	0.5
MW-3	Total	Water	03/07/02	42.8		6.4	11.0
MW-3 Duplicate	Total	Water	03/07/02	41.6		6.7	7.8
MW-3	Dissolved	Water	03/07/02	43.4		5.7	1.3
MW-3 Duplicate	Dissolved	Water	03/07/02	43.4		2.5	0.7
MW-3	Dissolved	Water	10/03/02	49		0.7	0.9
MW-3	Total	Water	02/11/04	46.9		2.5	1.8
MW-3	Dissolved	Water	02/11/04	46.1		2.4	0.4
MW-3	Total	Water	10/22/04	48.8		0.5	0.6
MW-3	Dissolved	Water	10/22/04	49.1		0.2	0.4
MW-4	Dissolved	Water	12/20/00	12.7		1.00 U	1.00 U
MW-4	Total	Water	03/07/02	9.2		8.70	29.90
MW-4	Dissolved	Water	03/07/02	10.0		3.30	1.20
MW-4	Dissolved	Water	10/03/02	16.5		0.20 U	0.70
MW-5	Total	Water	02/11/04	15.7			
MW-5	Dissolved	Water	02/11/04	15.4			
MW-5	Total	Water	10/22/04	24.6			
MW-5	Dissolved	Water	10/22/04	19.5			
MW-6	Total	Water	10/25/01	29.8		67.8	98.8
MW-6 Duplicate	Total	Water	10/25/01	27.3		35.0	48.6
MW-6	Dissolved	Water	10/25/01	18.2		1.00 U	2.00 U
MW-6 Duplicate	Dissolved	Water	10/25/01	19.0		1.00 U	2.00 U
MW-6	Total	Water	03/08/02	6.8		9.6	18.3
MW-6	Dissolved	Water	03/08/02	20.4		0.80	2.5
MW-6	Dissolved	Water	10/03/02	23.5		0.20	0.6
MW-6 Duplicate	Dissolved	Water	10/03/02	23.3		0.30	0.9
MW-6	Total	Water	02/12/04	22.6			
MW-6	Dissolved	Water	02/12/04	22.6			
MW-6	Total	Water	10/21/04	22.4			
MW-6	Dissolved	Water	10/21/04	23.1			
MW-7	Total	Water	10/25/01	18.1		127	164
MW-7	Dissolved	Water	10/25/01	3.04		1.00 U	2.00 U
MW-7	Total	Water	03/08/02	4.4		9.1	19.1
MW-7	Dissolved	Water	03/08/02	3.5		2.3	1.3
MW-7	Dissolved	Water	10/04/02	9.1		2.1	0.7
MW-7	Total	Water	02/12/04	5		0.7	0.5
MW-7 Duplicate	Total	Water	02/12/04	5		0.8	0.4
MW-7	Dissolved	Water	02/12/04	5.1		2.0	0.3
MW-7 Duplicate	Dissolved	Water	02/12/04	5.1		0.7	0.3
MW-7	Total	Water	10/21/04	5.1		1.1	0.1 U
MW-7	Dissolved	Water	10/21/04	6.3		1.1	0.1 U

Table 9
Metals
Groundwater and Stormwater
McCall Oil and Chemical

Location		Matrix	Date Sampled	Arsenic	Cadmium	Chromium		Copper	
MW-8	Total	Water	10/25/01	43.9		225		394	
MW-8	Dissolved	Water	10/25/01	2.33		1.00	U	2.00	U
MW-8	Total	Water	03/07/02	4.3		14.7		36.1	
MW-8	Dissolved	Water	03/07/02	8.6		2.9		1.3	
MW-8	Dissolved	Water	10/04/02	9.6		1.4		0.3	
MW-8	Total	Water	02/12/04	5.4		1.7		2.0	
MW-8	Dissolved	Water	02/12/04	5.6		0.8		0.2	
MW-8	Total	Water	10/21/04	10.1		3.1		3.8	
MW-8	Dissolved	Water	10/21/04	10.3		1.0		0.1	U
MW-9	Total	Water	02/13/04	18.3					
MW-9	Dissolved	Water	02/13/04	19.0					
MW-9	Total	Water	10/22/04	28.5					
MW-9	Dissolved	Water	10/22/04	30.7					
MW-10	Total	Water	02/13/04	30.9					
MW-10	Dissolved	Water	02/13/04	28.9					
MW-10	Total	Water	10/21/04	32.8					
MW-10	Dissolved	Water	10/21/04	34.2					
MW-12	Total	Water	02/13/04	23.3					
MW-12	Dissolved	Water	02/13/04	23.7					
MW-12	Total	Water	10/21/04	27.4					
MW-12	Dissolved	Water	10/21/04	28.2					
MW-14	Total	Water	02/12/04	1.5		1.3		1.7	
MW-14	Dissolved	Water	02/12/04	1.5		2.6		1.3	
MW-14	Total	Water	10/21/04	2.7		0.6		2.4	
MW-14	Dissolved	Water	10/21/04	1.5		0.5		2.1	
MW-15	Total	Water	02/12/04	3.5					
MW-15	Dissolved	Water	02/12/04	3.4					
MW-15	Total	Water	10/22/04	7.6					
MW-15	Dissolved	Water	10/22/04	6.2					

Note: U = not detected at method reporting limit. µg/L = micrograms per liter. ppb = parts per billion.

Table 10
Total Petroleum Hydrocarbons
Upland Soil and Catch Basin Sediment
McCall/GWCC
Portland, Oregon

Location	Matrix	Date Sampled	TPH - FIQ Gasoline		TPH - FIQ Diesel		TPH - FIQ Heavy Fuel Oil	
Geoprobe Borings - Soil mg/kg (ppm)								
GP-4 10-12	Soil	12/11/00	39	H	220	F	200	F
GP-7 2-4	Soil	12/14/00	10	U	5500	DH	4100	DL
GP-9 10-12	Soil	12/12/00	290	H	12000	H	10000	F
GP-14 0-2	Soil	12/13/00	10	U	14	F	55	F
GP-14 2-4	Soil	12/13/00	10	U	10	U	25	U
GP-14 20-22	Soil	12/13/00	10	U	30	Y	110	Y
GP-15 0-2	Soil	12/13/00	10	U	10	U	30	Z
GP-15 2-4	Soil	12/13/00	10	U	10	U	31	Z
GP-15 20-22	Soil	12/13/00	10	U	78	F	160	Z
GP-16 0-2	Soil	12/13/00	10	U	10	U	49	F
GP-16 2-4	Soil	12/13/00	10	U	10	U	25	U
GP-16 16-18	Soil	12/13/00	10	U	33	H	85	Y
GP-17 0-2	Soil	12/13/00	10	U	13	H	84	F
GP-17 2-4	Soil	12/13/00	10	U	10	U	25	U
GP-17 12-14	Soil	12/13/00	10	U	16	H	160	O
GP-18 0-2	Soil	12/13/00	10	U	21	H	210	F
GP-18 2-4	Soil	12/13/00	10	U	10	U	25	U
GP-18 16-18	Soil	12/13/00	10	U	10	U	38	F
GP-19 0-2	Soil	12/13/00	10	U	10	U	25	U
GP-19 2-4	Soil	12/13/00	10	U	68	H	160	L
GP-19 16-18	Soil	12/13/00	10	U	10	U	25	U
GP-20 2-4	Soil	12/13/00	10	U	10	U	25	U
GP-20 16-18	Soil	12/13/00	10	U	10	U	25	U
GP-22 10-12	Soil	02/09/01	17	H	310	F	160	Y
GP-23 16-18	Soil	02/09/01	10	U	80	H	220	Y
GP-24 12-14	Soil	02/09/01	10	U	74	H	130	Y
GP-24 16-18	Soil	02/09/01	10	U	65	H	180	Y
GP-25 10-12	Soil	02/09/01	10	U	72	H	250	Y
GP-25 14-16	Soil	02/09/01	10	U	65	H	160	Y
GP-26 14-16	Soil	02/09/01	10	U	68	H	170	Y
GP-26 18-20	Soil	02/09/01	10	U	10	U	25	U
GP-27 10-12	Soil	02/12/01	10	U	10	U	48	Y
GP-28 12-14	Soil	02/12/01	10	U	10	U	25	U
GP-29 4-6	Soil	02/12/01	710	H	18000	H	36000	F
GP-30 4-6	Soil	02/12/01	500	U	4200	H	1700	F
GP-31 14-16	Soil	02/13/01	6300	DH	35000	DH	38000	DF
GP-32 10-12	Soil	02/13/01	10	U	10	U	29	F
GP-33 16-18	Soil	02/13/01	10	U	130	H	280	Y
GP-34 12-14	Soil	02/13/01	10	U	48	H	160	Y
GP-35 10-12	Soil	02/13/01	10	U	25	H	55	Y
GP-36 12-14	Soil	02/13/01	18	H	240	H	430	Y
GP-38 10-12	Soil	02/14/01	47	H	930	Y	440	Y
GP-48 10-12	Soil	11/14/01	20	U	1420		1300	
GP-49 10-12	Soil	11/14/01	20	U	128		171	
GP-50 10-12	Soil	11/14/01	20	U	265		543	
Catch Basins - Sediment mg/kg (ppm)								
S-1	Soil	12/15/00	26	Y	400	H	1900	O
S-2	Soil	12/15/00	21	Y	300	H	2200	DO
S-3	Soil	12/15/00	580	Y	2400	H	7600	DO
S-3	Soil	11/04/04	210	U	1600	JH	8500	JO
S3-01C	Soil	12/15/00	10	U	10	U	30	Y

Notes: U = Not detected at method reporting limit. F = Fingerprit of the sample matches the elution pattern of calibration standard
L = The fingerprint resembles a petroleum product, but the elution pattern indicates the presence of lighter weight constituents.
H = The fingerprint resembles a petroleum product, but the elution pattern indicates the presence of heavier weight constituents.
O = The fingerprint resembles oil, but does not match the calibration standard.
Y = The fingerprint resembles a petroleum product in the correct carbon range, but the elution pattern does not match the calibration standard.
Z = The fingerprint does not resemble a petroleum product.
D = The reported result is from a dilution.

TABLE 11
PAHs and SVOCs (µg/kg)
Upland Soil and Catch Basin Sediment
McCall/GWCC

Sample Designation	GP-4 10-12		GP-7 2-4		GP-9 10-12		GP-14 0-2		GP-14 2-4		GP-14 20-22		GP-15 0-2		GP-15 2-4		GP-15 20-22		GP-16 0-2		GP-16 2-4		GP-16 16-18	
Matrix	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Date Sampled	12/11/00		12/14/00		12/12/00		12/13/00		12/13/00		12/13/00		12/13/00		12/13/00		12/13/00		12/13/00		12/13/00		12/13/00	
LPAHs																								
Naphthalene	110	U	40	JD	70	JD	7.5	U	7.4	U	25		1	J	7.9	U	150		1	J	7.9	U	27	
Acenaphthylene	110	U	83	U	160	U	0.7	J	0.5	J	6	J	0.5	J	7.9	U	40		7.6	U	7.9	U	5	J
Acenaphthene	110	U	70	JD	80	JD	7.5	U	7.4	U	9.4	U	7.6	U	7.9	U	84		7.6	U	7.9	U	7	J
Fluorene	110	U	89	D	280	D	7.5	U	0.6	J	3	J	0.8	J	7.9	U	240		7.6	U	7.9	U	4	J
Phenanthrene	140	D	520	D	1800	D	7.5	U	7.4	U	55		13		7.9	U	1300	D	3	J	7.9	U	36	
Anthracene	10	JD	140	D	210	D	0.9	J	0.7	J	8	J	2	J	7.9	U	65		7.6	U	7.9	U	8	J
2-Methylnaphthalene	110	U	380	D	420	D	0.6	J	0.5	J	9.9		1	J	7.9	U	64		1	J	0.8	J	8	J
Total LPAH	150		1239		2860		2.2		2.3		106.9		18.3				1943		5		0.8		95	
HPAHs																								
Fluoranthene	70	JD	83	U	310	D	6	J	2	J	94		34		7.9	U	330		8	J	1	J	30	
Pyrene	160	D	83	U	1200	D	7	J	2	J	130		29		0.7	J	390		7	J	1	J	89	
Benz(a)anthracene	80	JD	240	D	330	D	4	J	1	J	40		17		7.9	U	110		5	J	0.9	J	38	
Chrysene	100	JD	740	D	1300	D	7	J	1	J	63		28		0.7	J	130		7	J	1	J	48	
Benzo(b)fluoranthene	50	JD	83	U	160	U	5	J	1	J	56		25		0.7	J	96		6	J	1	J	30	
Benzo(k)fluoranthene	40	JD	83	U	160	U	5	J	1	J	46		22		0.9	J	97		6	J	2	J	33	
Benzo(a)pyrene	80	JD	70	JD	210	D	6	J	0.8	J	76		24		0.7	J	160		5	J	1	J	44	
Indeno(1,2,3-cd)pyrene	60	JD	30	JD	60	JD	6	J	1	J	89		24		1	J	130		7	J	2	J	28	
Dibenz(a,h)anthracene	20	JD	20	JD	20	JD	1	J	15	U	10	J	5	J	0.7	J	20	J	1	J	16	U	4	J
Benzo(g,h,i)perylene	70	JD	60	JD	100	JD	8	J	2	J	100		23		1	J	140		8	J	2	J	33	
Total HPAHs	730		1160		3530		55		42		704		231		6		1603		60		12		377	
SVOCs																								
3- and 4-Methylphenol Coelution	2200	U	1700	U	3300	U	150	U	150	U	190	U	150	U	160	U	60	J	150	U	160	U	180	U
Dibenzofuran	110	U	20	JD	80	JD	0.6	J	0.7	J	2.0	J	0.8	J	7.9	U	47		7.6	U	7.9	U	2	J
Butyl Benzyl Phthalate	220	U	170	U	930	D	15	U	15	U	19	U	4	J	16	U	26	U	0.7	J	16	U	18	U
Di-n-octyl Phthalate	2200	U	1700	U	3300	U	150	U	150	U	190	U	150	U	160	U	260	U	150	U	160	U	180	U

NOTE: µg/kg = micrograms per kilogram or part per billion. U = not detected at or above the indicated method reporting limit. J = estimated concentration. D = reported result is from a dilution.

TABLE 11
PAHs and SVOCs (µg/kg)
Upland Soil and Catch Basin Sediment
McCall/GWCC

Sample Designation	GP-17 0-2		GP-17 2-4		GP-17 12-14		GP-18 0-2		GP-18 2-4		GP-18 16-18		GP-19 0-2	
Matrix	Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Date Sampled	12/13/00		12/13/00		12/13/00		12/14/00		12/14/00		12/14/00		12/14/00	
LPAHs														
Naphthalene	7.4	U	7.5	U	26		7.6	U	7.6	U	7.3	U	7.3	U
Acenaphthylene	7.4	U	0.6	J	7.0	J	7.6	U	7.6	U	0.5	J	7.3	U
Acenaphthene	7.4	U	7.5	U	8.7	U	7.6	U	7.6	U	7.3	U	7.3	U
Fluorene	7.4	U	7.5	U	4	J	7.6	U	7.6	U	0.6	J	7.3	U
Phenanthrene	7.4	U	7.5	U	37		7.6	U	7.6	U	4	J	7.3	U
Anthracene	7.4	U	0.6	J	6	J	7.6	U	7.6	U	1	J	7.3	U
2-Methylnaphthalene	7.4	U	2	J	6	J	0.5	J	7.6	U	0.6	J	7.3	U
Total LPAH			3.2		86		0.5				6.7			
HPAHs														
Fluoranthene	5	J	7	J	63		6	J	2	J	9.4		2	J
Pyrene	4	J	8.8		68		6	J	2	J	11		2	J
Benz(a)anthracene	3	J	4	J	29		3	J	1	J	6	J	2	J
Chrysene	5	J	7	J	36		6	J	2	J	11		2	J
Benzo(b)fluoranthene	4	J	4	J	28		5	J	1	J	8.4		2	J
Benzo(k)fluoranthene	3	J	5	J	31		4	J	2	J	5	J	2	J
Benzo(a)pyrene	4	J	5	J	37		4	J	1	J	6	J	2	J
Indeno(1,2,3-cd)pyrene	5	J	5	J	28		5	J	1	J	6	J	2	J
Dibenz(a,h)anthracene	1	J	0.8	J	5	J	1	J	15	U	2	J	1	J
Benzo(g,h,i)perylene	6	J	6	J	27		5	J	1	J	7	J	2	J
Total HPAHs	40		53		352		45		13		71.8		19	
SVOCs														
3- and 4-Methylphenol Coelution	150	U	150	U	170	U	150	U	150	U	150	U	150	U
Dibenzofuran	7.4	U	7.5	U	2	J	7.6	U	7.6	U	0.5	J	7.3	U
Butyl Benzyl Phthalate	1	J	15	U	17	U	1	J	15	U	3	J	1	J
Di-n-octyl Phthalate	150	U	150	U	2	J	150	U	150	U	5	J	0.8	J

Sample Designation	GP-19 2-4		GP-19 16-18		GP-20 2-4		GP-20 16-18		GP-22 10-12		GP-23 16-18		GP-24 12-14		GP-24 16-18	
Matrix	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Date Sampled	12/14/00		12/14/00		12/14/00		12/14/00		02/09/01		02/09/01		02/09/01		02/09/01	
LPAHs																
Naphthalene	6	J	2	J	2	J	7.1	U	47		32		36		18	
Acenaphthylene	0.8	J	0.8	J	0.4	J	7.1	U	5	J	10		5	J	3	J
Acenaphthene	7.4	U	7.1	U	7.5	U	7.1	U	27		9	J	8	J	22	
Fluorene	0.9	J	0.7	J	7.5	U	7.1	U	82		8	J	8	J	6	J
Phenanthrene	4	J	7.1	U	4	J	7.1	U	180		66		47		37	
Anthracene	1	J	0.7	J	1	J	7.1	U	11		16		10		7	J
2-Methylnaphthalene	1	J	0.7	J	0.8	J	7.1	U	160		13		19		4	J
Total LPAH	13.7		4.9		8.2				512		154		133		97	
HPAHs																
Fluoranthene	4	J	0.9	J	6	J	2	J	49		120		54		34	
Pyrene	5	J	2	J	7	J	4	J	63		150		70		54	
Benz(a)anthracene	3	J	0.5	J	3	J	2	J	18		30		15		13	
Chrysene	4	J	0.6	J	5	J	3	J	24		39		19		18	
Benzo(b)fluoranthene	4	J	7.1	U	3	J	1	J	19		28		13		9.5	
Benzo(k)fluoranthene	4	J	0.7	J	4	J	1	J	15		27		12		11	
Benzo(a)pyrene	5	J	0.6	J	4	J	2	J	21		38		17		15	
Indeno(1,2,3-cd)pyrene	7	J	0.8	J	3	J	1	J	25		27		12		11	
Dibenz(a,h)anthracene	1	J	0.7	J	0.9	J	14	U	4	J	5	J	3	J	2	J
Benzo(g,h,i)perylene	7	J	0.9	J	4	J	3	J	23		32		14		12	
Total HPAHs	44		7.7		40		19		261		496		229		180	
SVOCs																
3- and 4-Methylphenol Coelution	150	U	140	U	150	U	140	U	96	U	60	J	110		90	U
Dibenzofuran	1	J	0.9	J	0.5	J	7.1	U	32		6	J	4	J	2	J
Butyl Benzyl Phthalate	15	U	14	U	15	U	14	U	9.6	U	10.0	U	9.9	U	9.0	U
Di-n-octyl Phthalate	150	U	140	U	150	U	140	U	9.6	U	10.0	U	9.9	U	9.0	U

NOTE: µg/kg = micrograms per kilogram or part per billion. U = not detected at or above the indicated method reporting limit. J = estimated concentration. D = reported result is from a dilution.

TABLE 11
PAHs and SVOCs (µg/kg)
Upland Soil and Catch Basin Sediment
McCall/GWCC

Sample Designation	GP-25 10-12	GP-25 14-16	GP-26 14-16	GP-26 18-20	GP-27 10-12	GP-28 12-14	GP-29 4-6	GP-30 4-6	GP-31 14-16	GP-32 10-12	GP-33 16-18	GP-34 12-14	GP-35 10-12	GP-36 12-14	GP-38 10-12
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date Sampled	02/09/01	02/09/01	02/09/01	02/09/01	02/12/01	02/12/01	02/12/01	02/12/01	02/13/01	02/13/01	02/13/01	02/13/01	02/13/01	02/13/01	02/14/01
								LPAHs							
Naphthalene	67	100	61	15	8	7.2 U	870 D	150 U	4300 D	7.1 U	12	56	4 J	54	800 D
Acenaphthylene	17	15	8 J	1 J	0.9 J	7.2 U	380 U	150 U	1500 U	7.1 U	3 J	9.8	4 J	9 J	83
Acenaphthene	15	25	17	8.4 U	7.6 U	7.2 U	1000 D	150 U	5500 D	7.1 U	8 U	10	7.7 U	9.4	200
Fluorene	18	21	14	2 J	1 J	7.2 U	1500 D	10 JD	12000 D	0.5 J	4 J	13	3 J	10	130
Phenanthrene	110	150	83	11	7	7.2 U	3900 D	40 JD	37000 D	6 J	22	79	20	67	590 D
Anthracene	28	30	19	2 J	2 J	7.2 U	1100 D	20 JD	6300 D	7.1 U	5 J	17	4 J	13	110
2-Methylnaphthalene	30	38	24	5 J	2 J	7.2 U	13000 D	20 JD	190000 D	2 J	5 J	21	3 J	19	200
Total LPAH	285	379	226	36	21		21370	90	255100	9	51	206	38	181	2113
								HPAHs							
Fluoranthene	160	160	86	12	6 J	7.2 U	1100 D	20 JD	2400 D	4 J	24	93	30	70	540 D
Pyrene	190	190	120	15	10	7.2 U	6800 D	80 JD	16000 D	5 J	34	120	38	95	650 D
Benz(a)anthracene	58	57	44	5 J	4 J	7.2 U	1100 D	150 U	4200 D	2 J	8.5	29	10	29	120
Chrysene	71	69	52	7 J	4 J	7.2 U	2600 D	100 JD	14000 D	6 J	13	41	13	37	150
Benzo(b)fluoranthene	50	40	33	5 J	4 J	7.2 U	400 D	40 JD	1000 JD	3 J	9	31	12	25	94
Benzo(k)fluoranthene	40	38	31	4 J	4 J	7.2 U	200 JD	10 JD	600 JD	2 J	8.4	24	12	25	87
Benzo(a)pyrene	66	59	46	6 J	5 J	7.2 U	730 D	70 JD	2600 D	2 J	11	34	19	34	130
Indeno(1,2,3-cd)pyrene	72	56	45	7 J	6 J	1 J	200 JD	40 JD	500 JD	2 J	7 J	23	14	25	78
Dibenz(a,h)anthracene	9 J	9 J	8 J	1 J	1 J	7.2 U	100 JD	30 JD	400 JD	0.7 J	2 J	4 J	2 J	4 J	12
Benzo(g,h,i)perylene	61	48	36	6 J	5 J	7.2 U	400 JD	60 JD	1000 JD	2 J	7 J	26	15	25	73
Total HPAHs	777	726	501	68	49	1	13630	450	42700	29	124	425	165	369	1934
								SVOCs							
3- and 4-Methylphenol Coelution	50 J	160	180	84 U	76 U	72 U	3800 U	1500 U	15000 U	71 U	80 U	95 U	77 U	80 J	1000 D
Dibenzofuran	11	11	9 J	2 J	0.8 J	7.2 U	380 U	6 JD	3000 D	7.1 U	2 J	8 J	0.8 J	6 J	45
Butyl Benzyl Phthalate	9.9 U	9.8 U	9.9 U	8.4 U	2 J	7.2 U	380 U	150 U	1500 U	7.1 U	8.0 U	9.5 U	0.7 J	9.4 U	8.4 U
Di-n-octyl Phthalate	9.9 U	9.8 U	9.9 U	8.4 U	7.6 U	7.2 U	380 U	150 U	1500 U	7.1 U	8.0 U	9.5 U	7.7 U	9.4 U	8.4 U

TABLE 11
PAHs and SVOCs (μg/kg)
Upland Soil and Catch Basin Sediment
McCall/GWCC

Sample Designation Matrix Date Sampled	S-1 Sediment 12/15/00	S-2 Sediment 12/15/00	S-3 Sediment 12/15/00	S-3 Sediment 11/04/04	S3-01C Sediment 12/15/00
			LPAHs		
Naphthalene	200 JD	50 JD	400 JD	64 JD	12 U
Acenaphthylene	40 JD	20 JD	60 JD	37 JU	12 U
Acenaphthene	200 JD	30 JD	720 U	26 JU	12 U
Fluorene	100 JD	20 JD	3600 D	72 JD	12 U
Phenanthrene	1500 D	320 D	3600 D	660 JD	12 U
Anthracene	400 JD	50 JD	2600 D	140 JD	12 U
2-Methylnaphthalene	100 JD	50 JD	400 JD	31 JU	0.6 J
Total LPAH	2540	540	10660	936	0.6
			HPAHs		
Fluoranthene	2600 D	690 D	5800 D	1400 JD	3 J
Pyrene	2600 D	770 D	5500 D	1200 JD	3 J
Benz(a)anthracene	1300 D	440 D	2500 D	400 JD	2 J
Chrysene	2000 D	740 D	5300 D	1100 JD	3 J
Benzo(b)fluoranthene	2000 D	780 D	4100 D	1100 JD	3 J
Benzo(k)fluoranthene	1500 D	540 D	3400 D	270 JD	2 J
Benzo(a)pyrene	1900 D	670 D	3700 D	490 JD	2 J
Indeno(1,2,3-cd)pyrene	1500 D	490 D	3200 D	530 JD	2 J
Dibenz(a,h)anthracene	300 JD	100 JD	800 JD	150 JD	24 U
Benzo(g,h,i)perylene	1600 D	500 D	3600 D	790 JD	3 J
Total HPAHs	17300	5720	37900	7430	23
			SVOCs		
3- and 4-Methylphenol Coelution	13000 U	1900 U	4000 JD	3000 JD	240 U
Dibenzofuran	100 JD	20 JD	200 JD	69 JD	12 U
Butyl Benzyl Phthalate	1500 D	2500 D	5000 D	930 JD	1 J
Di-n-octyl Phthalate	13000 U	1900 U	14000 U	11000 JD	2 J

NOTE: μg/kg = micrograms per kilogram or part per billion. U = not detected at or above the indicated method reporting limit. J = estimated concentration. D = reported result is from a dilution.

Table 12
Metals
Upland Soil and Catch Basin Sediment
McCall/GWCC
Portland, Oregon

Location		Matrix	Date Sampled	Arsenic	Cadmium	Chromium	Copper	Lead	Zinc
Geoprobe Borings - Soil mg/kg (ppm)									
GP-4 10-12	Total	Soil	12/11/00	3.3		11.6	15.7		
GP-7 2-4	Total	Soil	12/14/00	2.9		13.3	16.8		
GP-9 10-12	Total	Soil	12/12/00	2.4		14.2	19.3		
GP-14 0-2	Total	Soil	12/14/00	2.2		13.1	17.4		
GP-14 2-4	Total	Soil	12/14/00	1.7		12.3	13.4		
GP-14 20-22	Total	Soil	12/14/00	4.6		14.5	19.0		
GP-15 0-2	Total	Soil	12/14/00	1.7		11.1	18.1		
GP-15 2-4	Total	Soil	12/14/00	1.8		12.7	14.7		
GP-15 20-22	Total	Soil	12/14/00	3.1		22.8	27.1		
GP-16 0-2	Total	Soil	12/14/00	1.6		10.9	15.4		
GP-16 2-4	Total	Soil	12/14/00	1.8		14.0	15.4		
GP-16 16-18	Total	Soil	12/14/00	3.2		12.9	20.7		
GP-17 0-2	Total	Soil	12/14/00	1.5		9.96	13.4		
GP-17 2-4	Total	Soil	12/14/00	1.8		11.9	14.6		
GP-17 12-14	Total	Soil	12/13/00	2.2		16.6	18.7		
GP-18 0-2	Total	Soil	12/14/00	1.3		8.88	13.7		
GP-18 2-4	Total	Soil	12/14/00	1.6		11.1	13.5		
GP-18 16-18	Total	Soil	12/14/00	2.5		12.6	16.9		
GP-19 0-2	Total	Soil	12/14/00	1.6		10.1	12.3		
GP-19 2-4	Total	Soil	12/14/00	1.9		12.9	15.0		
GP-19 16-18	Total	Soil	12/14/00	1.6		10.6	13.2		
GP-20 2-4	Total	Soil	12/14/00	1.6		11.1	14.2		
GP-20 16-18	Total	Soil	12/13/00	1.6		9.11	11.6		
Catch Basins - Sediment mg/kg (ppm)									
S-1	Total	Sediment	12/15/00	5.2	2	48.9	137	145	638
S-2	Total	Sediment	12/15/00	7.5	1.42	63.7	316	211	584
S-3	Total	Sediment	12/15/00	37.9	2.86	144	1050	454	985
S-3	Total	Sediment	11/04/04	25.6	1.9	189	1360	600	752
S3-01C	Total	Sediment	12/15/00	4.4	0.12	11.9	27.4	8.58	82.7

Note: U = not detected at method reporting limit. µg/kg = micrograms per kilogram. ppb = parts per billion.

TABLE 13
Shoreline Groundwater Comparison with Surface Water Screening Criteria (µg/L)
McCall Oil and Chemical

	Screening Levels: Chronic WQC	Screening Levels: Reference	Arithmetic Mean Concentration	EX-2 12/20/00		EX-2 03/07/02		EX-2 10/04/02		EX-2 02/12/04		EX-2 10/21/04		EX-3 12/20/00		EX-3 03/07/02		EX-3 10/04/02		EX-3 02/12/04		EX-3 10/21/04		EX-5 12/20/00		EX-5 03/07/02		EX-5 10/04/02		MW-5 12/20/00		MW-5 03/07/02		MW-5 10/03/02	
Low Molecular Weight PAHs																																			
Naphthalene	620	a	0.03	**0.01**	J	0.013	U	**0.022**	J	**0.023**	J	0.012	U	**0.02**	J	0.013	U	**0.038**	J	0.012	U	0.012	U	**0.009**	J	**0.028**	J	**0.022**	J	0.008	U	**0.034**	J	0.012	U
Acenaphthylene	307	b	0.01	0.006	U	0.011	U	0.011	U	0.011	U	0.011	U	0.006	U	0.011	U	0.011	U	0.011	U	0.011	U	0.006	U	0.011	U	0.011	U	0.006	U	0.011	U	0.011	U
Acenaphthene	520	a	0.08	**0.02**	J	**0.041**	J	**0.110**	J	**0.025**	J	**0.037**	J	**0.01**	J	0.0093	U	**0.023**	J	0.0088	U	0.0088	U	**0.009**	J	**0.024**	J	**0.015**	J	0.007	U	0.0094	U	0.0088	U
Fluorene	39	b	0.07	0.006	U	0.013	U	0.012	U	0.012	U	0.012	U	0.006	U	0.013	U	0.012	U	0.012	U	0.012	U	0.006	U	0.013	U	0.012	U	0.006	U	0.013	U	0.012	U
Phenanthrene	19	b	0.14	**0.04**	J	**0.047**	J	**0.057**	J	**0.039**	J	**0.021**	J	**0.04**	J	**0.06**	J	**0.06**	J	**0.028**	J	**0.016**	J	**0.02**	J	**0.034**	J	**0.039**	J	0.007	U	0.011	U	**0.021**	J
Anthracene	21	b	0.03	0.006	U	0.016	U	0.015	U	0.015	U	0.015	U	0.006	U	**0.019**	J	**0.016**	J	0.015	U	0.015	U	0.006	U	0.016	U	**0.017**	J	0.006	U	0.016	U	**0.025**	J
2-Methylnaphthalene	72	b	0.02	**0.008**	J	**0.012**	J	**0.017**	J	**0.013**	J	0.012	U	0.008	U	0.012	U	**0.015**	J	0.012	U	0.012	U	0.008	U	0.012	U	0.012	U	0.008	U	0.013	U	0.012	U
High Molecular Weight PAHs																																			
Fluoranthene	7.1	b	0.05	**0.009**	J	**0.017**	J	0.013	U	0.013	U	0.013	U	**0.01**	J	**0.038**	J	**0.034**	J	0.013	U	0.013	U	**0.009**	J	0.013	U	0.013	U	0.007	U	0.014	U	**0.031**	J
Pyrene	10.1	b	0.08	**0.03**	J	**0.039**	J	**0.074**	J	**0.036**	J	**0.032**	J	**0.03**	J	**0.064**	J	**0.061**	J	**0.028**	J	**0.030**	J	**0.040**	J	**0.046**	J	**0.067**	J	0.007	U	**0.024**	J	**0.037**	J
Benz(a)anthracene	2.2	b	0.02	**0.007**	J	0.013	U	0.012	U	0.012	U	0.012	U	**0.008**	J	0.013	U	0.012	U	0.012	U	0.012	U	**0.006**	J	0.013	U	0.012	U	0.005	U	0.013	U	**0.030**	J
Chrysene	2.0	b	0.03	**0.007**	J	0.015	U	0.014	U	0.014	U	0.014	U	**0.01**	J	0.015	U	0.014	U	0.014	U	0.014	U	**0.008**	J	0.015	U	0.014	U	0.006	U	0.015	U	**0.022**	J
Benzo(b)fluoranthene	0.68	b	0.02	**0.006**	J	0.021	U	0.020	U	0.020	U	0.020	U	**0.006**	J	0.021	U	0.020	U	0.020	U	0.020	U	0.005	U	0.021	U	0.020	U	0.005	U	0.021	U	0.020	U
Benzo(k)fluoranthene	0.64	b	0.01	**0.006**	J	0.021	U	0.020	U	0.020	U	0.020	U	**0.006**	J	0.021	U	0.020	U	0.020	U	0.020	U	**0.003**	J	0.021	U	0.020	U	0.003	U	0.021	U	0.020	U
Benzo(a)pyrene	0.96	b	0.02	**0.007**	J	0.017	U	0.016	U	0.016	U	0.016	U	**0.007**	J	0.017	U	0.016	U	0.016	U	0.016	U	0.006	U	0.017	U	0.016	U	0.006	U	0.018	U	0.016	U
Indeno(1,2,3-cd)pyrene	0.28	b	0.02	**0.009**	J	0.026	U	0.024	U	0.024	U	0.024	U	**0.009**	J	0.026	U	0.024	U	0.024	U	0.024	U	**0.007**	J	0.026	U	0.024	U	0.004	U	0.026	U	0.024	U
Dibenz(a,h)anthracene	0.28	b	0.01	**0.005**	J	0.033	U	0.031	U	0.031	U	0.031	U	0.004	U	0.033	U	0.031	U	0.031	U	0.031	U	0.004	U	0.033	U	0.031	U	0.004	U	0.033	U	0.031	U
Benzo(g,h,i)perylene	0.44	b	0.03	**0.01**	J	0.018	U	0.017	U	0.017	U	0.017	U	**0.02**	J	**0.034**	J	**0.025**	J	0.017	U	0.017	U	**0.03**	J	**0.054**	J	**0.031**	J	0.005	U	0.018	U	0.017	U
Total PAHs			0.68																																
Miscellaneous Semivolatiles																																			
3- and 4-Methylphenol	--		0.12	**0.02**	J	0.055	U	0.051	U	0.051	U	0.051	U	**0.05**	J	**0.087**	J	**0.090**	J	0.051	U	0.051	U	**0.007**	J	0.055	U	0.051	U	0.003	U	0.055	U	0.051	U
Dibenzofuran	3.7	c	0.02	0.007	U	0.014	U	0.014	U	0.014	U	0.014	U	0.007	U	0.014	U	0.014	U	0.014	U	0.014	U	0.007	U	0.014	U	0.014	U	0.007	U	0.015	U	0.200	U
Butyl Benzyl Phthalate	3.0	a	0.02	0.02	U	0.028	U	0.026	U	0.026	U	0.026	U	0.02	U	0.028	U	0.026	U	0.026	U	0.026	U	0.02	U	0.028	U	0.026	U	0.02	U	0.028	U	**0.048**	J
Di-n-octyl Phthalate	3.0	a	0.01	0.003	U	0.035	U	0.032	U	0.032	U	0.032	U	0.003	U	0.035	U	0.032	U	0.032	U	0.032	U	0.003	U	0.035	U	0.032	U	0.003	U	0.035	U	0.014	U
Metals																																			
Arsenic - Total	--		26	--		--		--		**57**		**65**		--		--		--		**87**		**90**		--		--		--		--		--		--	
Arsenic - Dissolved	150	d	22	--		--		--		**66**		**72**		--		--		--		**86**		**90**		--		--		--		--		--		--	
Chromium - Total	--		35	--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
Chromium - Dissolved	24	d	1.4	--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
Copper - Total	--		57	--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
Copper - Dissolved	2.7	d	0.8	--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
Volatile Organic Compounds																																			
1,2-Dichloroethylene(cis)	--		1.1	0.5	U	0.5	U	0.5	U	--		--		0.5	U	0.5	U	0.5	U	--		--		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethylene	21,900	a	0.25	0.5	U	0.5	U	0.5	U	--		--		0.5	U	0.5	U	0.5	U	--		--		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethylene	840	a	0.25	0.5	U	0.5	U	0.5	U	--		--		0.5	U	0.5	U	0.5	U	--		--		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl Chloride	--		0.37	0.5	U	0.5	U	0.5	U	--		--		0.5	U	0.5	U	0.5	U	--		--		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Notes:

U = Not detected at indicated quantitation limit; J = Estimated concentration; Bold value = detected concentration

(a) DEQ 2004 AWQC

(b) EPA 2003 Final Chronic Values

(c) Oak Ridge National Lab Tier II Secondary Chronic Value

(d) EPA, 2004; National Recommended Water Quality Criteria

(e) City of Portland, 2004b, BES database transmittal on 1-30-04

(f) Fuhrer et al., 1996; DEQ, 2002; 90th percentile value for Lower Columbia Basin

TABLE 13
Shoreline Groundwater Comparison with Surface Water Screening Criteria (µg/L)
McCall Oil and Chemical

	Screening Levels: Chronic WQC	Screening Levels: Reference	Arithmetic Mean Concentration	MW-5 Dup 10/03/02		MW-5 02/11/04		MW-5 10/22/04		MW-7 10/25/01		MW-7 03/08/02		MW-7 10/04/02		MW-7 02/12/04		MW-7 Dup 02/12/04		MW-7 10/21/04		MW-8 10/25/01		MW-8 03/07/02		MW-8 10/04/02		MW-8 02/12/04		MW-8 10/21/04		MW-14 02/11/04		MW-14 10/21/04	
Low Molecular Weight PAHs																																			
Naphthalene	620	a	0.03	**0.023**		**0.025**	J	0.012	U	5.00	U	**0.086**	J	**0.020**	J	0.012	U	0.012	U	0.012	U	5.00	U	**0.16**	J	**0.38**		**0.031**	J	0.012	U	**0.023**	J	0.012	U
Acenaphthylene	307	b	0.01	0.011	U	0.011	U	0.011	U	5.00	U	**0.025**	J	0.011	U	0.011	U	0.011	U	0.011	U	5.00	U	0.011	U	**0.210**		0.011	U	0.011	U	0.011	U	0.011	U
Acenaphthene	520	a	0.08	0.0088	U	0.0088	U	0.0088	U	5.00	U	0.0092	U	0.0088	U	0.0088	U	**0.045**	J	**0.032**	J	5.00	U	**0.58**		**0.78**		**0.34**		**0.21**		**0.0310**	J	0.0088	U
Fluorene	39	b	0.07	0.012	U	0.012	U	0.012	U	5.00	U	0.013	U	0.012	U	0.012	U	0.012	U	0.012	U	5.00	U	**0.56**		**0.91**		**0.36**		**0.22**		0.012	U	0.012	U
Phenanthrene	19	b	0.14	**0.021**	J	0.011	U	0.011	U	5.00	U	**0.077**	J	**0.034**	J	**0.024**	J	**0.036**	J	0.011	U	5.00	U	**1.2**		**1.7**		**0.22**		**0.22**		0.011	U	0.011	U
Anthracene	21	b	0.03	**0.022**	J	0.015	U	0.015	U	5.00	U	**0.039**	J	**0.031**	J	**0.019**	J	**0.029**	J	0.015	U	5.00	U	**0.097**	J	**0.380**		**0.028**	J	0.015	U	0.015	U	0.015	U
2-Methylnaphthalene	72	b	0.02	0.012	U	0.012	U	0.012	U	5.00	U	**0.034**	J	0.012	U	0.012	U	0.012	U	0.012	U	5.00	U	**0.081**	J	**0.160**	J	0.012	U	**0.0019**	J	0.012	U	0.012	U
High Molecular Weight PAHs																																			
Fluoranthene	7.1	b	0.05	**0.026**	J	0.013	U	0.013	U	5.00	U	**0.061**	J	0.013	U	0.013	U	0.013	U	0.013	U	5.00	U	**0.22**		**0.73**		**0.035**	J	**0.048**	J	0.013	U	0.013	U
Pyrene	10.1	b	0.08	**0.034**	J	0.015	U	0.015	U	5.00	U	**0.089**	J	**0.025**	J	0.015	U	0.015	U	0.015	U	5.00	U	**0.34**		**1.10**		**0.066**	J	**0.079**	J	0.015	U	0.015	U
Benz(a)anthracene	2.2	b	0.02	0.012	U	0.012	U	0.012	U	5.00	U	**0.044**	J	0.012	U	0.012	U	0.012	U	0.012	U	5.00	U	**0.071**	J	**0.390**		0.012	U	0.012	U	0.012	U	0.012	U
Chrysene	2.0	b	0.03	0.014	U	0.014	U	0.014	U	5.00	U	**0.045**	J	0.014	U	0.014	U	0.014	U	0.014	U	5.00	U	**0.16**	J	**0.56**		0.014	U	0.014	U	0.014	U	0.014	U
Benzo(b)fluoranthene	0.68	b	0.02	0.020	U	0.020	U	0.020	U	5.00	U	0.021	U	0.020	U	0.020	U	0.020	U	0.020	U	5.00	U	**0.064**	J	**0.350**		0.020	U	0.020	U	0.020	U	0.020	U
Benzo(k)fluoranthene	0.64	b	0.01	0.020	U	0.020	U	0.020	U	5.00	U	0.021	U	0.020	U	0.020	U	0.020	U	0.020	U	5.00	U	0.02	U	**0.13**	J	0.02	U	0.02	U	0.020	U	0.020	U
Benzo(a)pyrene	0.96	b	0.02	0.016	U	0.016	U	0.016	U	5.00	U	0.017	U	0.016	U	0.016	U	0.016	U	0.016	U	5.00	U	**0.089**	J	**0.360**		0.016	U	0.016	U	0.016	U	0.016	U
Indeno(1,2,3-cd)pyrene	0.28	b	0.02	0.024	U	0.024	U	0.024	U	5.00	U	0.026	U	0.024	U	0.024	U	0.024	U	0.024	U	5.00	U	**0.04**	J	**0.25**		0.02	U	0.02	U	0.024	U	0.024	U
Dibenz(a,h)anthracene	0.28	b	0.01	0.031	U	0.031	U	0.031	U	5.00	U	0.032	U	0.031	U	0.031	U	0.031	U	0.031	U	5.00	U	0.031	U	0.031	U	0.031	U	0.031	U	0.031	U	0.031	U
Benzo(g,h,i)perylene	0.44	b	0.03	0.017	U	0.017	U	0.017	U	5.00	U	**0.099**	J	0.017	U	0.017	U	0.017	U	0.017	U	5.00	U	**0.057**	J	**0.310**		0.017	U	0.017	U	0.017	U	0.017	U
Total PAHs			0.68																																
Miscellaneous Semivolatiles																																			
3- and 4-Methylphenol	--		0.12	0.051	U	0.051	U	0.051	U	5.00	U	**1.1**		0.05	U	0.051	U	0.051	U	0.051	U	5.00	U	**0.22**	J	**1.60**		0.051	U	0.051	U	0.051	U	0.051	U
Dibenzofuran	3.7	c	0.02	0.014	U	0.014	U	0.014	U	5.00	U	0.014	U	0.014	U	0.014	U	0.014	U	0.014	U	5.00	U	**0.18**	J	0.014	U	**0.092**	J	0.014	U	0.014	U	0.014	U
Butyl Benzyl Phthalate	3.0	a	0.02	0.026	U	0.026	U	0.026	U	5.00	U	0.027	U	0.026	U	0.026	U	0.026	U	0.026	U	5.00	U	**0.13**	J	0.026	U	0.026	U	0.026	U	0.026	U	0.026	U
Di-n-octyl Phthalate	3.0	a	0.01	0.014	U	0.032	U	0.032	U	5.00	U	0.034	U	0.032	U	0.032	U	0.032	U	0.032	U	5.00	U	0.032	U	0.032	U	0.032	U	0.032	U	0.032	U	0.032	U
Metals																																			
Arsenic - Total	--		26	--		**16**		**25**		**18**		**4.4**		--		**5.0**		**5.0**		**5.1**		**44**		**4.3**		--		**5.4**		**10.1**		**1.5**		**2.7**	
Arsenic - Dissolved	150	d	22	--		**15**		**20**		**3.0**		**3.5**		**9.1**		**5.1**		**5.1**		**6.3**		**2.3**		**8.6**		**9.6**		**5.6**		**10.3**		**1.5**		**1.5**	
Chromium - Total	--		35	--		--		--		**127**		**9.1**		--		**0.7**		**0.8**		**1.1**		**225**		**15**		--		**1.7**		**3.1**		**1.3**		**0.6**	
Chromium - Dissolved	24	d	1.4	--		--		--		1.0	U	**2.3**		**2.1**		**2.0**		**0.7**		**1.1**		1.0	U	**2.9**		**1.4**		**0.8**		**1.0**		**2.6**		**0.5**	
Copper - Total	--		57	--		--		--		**164**		**19.1**		--		**0.5**		**0.4**		0.1	U	**394**		**36**		--		**2.0**		**3.8**		**1.7**		**2.4**	
Copper - Dissolved	2.7	d	0.8	--		--		--		2.0	U	**1.3**		**0.7**		**0.7**		**0.3**		0.1	U	2.0	U	**1.3**		**0.3**		**0.2**		0.1	U	**1.3**		**2.1**	
Volatile Organic Compounds																																			
1,2-Dichloroethylene(cis)	--		1.1	0.5	U	0.5	U	0.5	U	**2.9**		**2.1**		**2.5**		**5.2**		**5.3**		**3.2**		**1.2**		0.5	U	**1.1**		0.5	U	**1.2**		0.5	U	**1.0**	
Trichloroethylene	21,900	a	0.25	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethylene	840	a	0.25	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl Chloride	--		0.37	0.5	U	0.5	U	0.5	U	1.0	U	0.5	U	0.5	U	**1.4**		**1.4**		**0.8**		1.0	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Notes:

U = Not detected at indicated quantitation limit; J = Estimated concentration; Bold value = detected concentration

(a) DEQ 2004 AWQC

(b) EPA 2003 Final Chronic Values

(c) Oak Ridge National Lab Tier II Secondary Chronic Value

(d) EPA, 2002; National Recommended Water Quality Criteria

(e) City of Portland, 2004b, BES database transmittal on 1-30-04

(f) Fuhrer et al., 1996; DEQ, 2002; 90th percentile value for Lower Columbia Basin

TABLE 14
Comparison of Stormwater Data to Surface Water Criteria (µg/L)
McCall Oil and Chemical

	Screening Levels: Chronic WQC	Reference	COP Municipal Stormwater (e)	Willamette R. Background (f)	NPDES Permit Limits	Arithmetic Mean Concentration	S-1 12/20/00	S-1 03/06/02	S-1 04/07/05	S-2 12/20/00	S-2 03/06/02	S-2 04/07/05	S-3 12/20/00	S-3 03/06/02	S-3 04/07/05	S-4 12/20/00	S-4 Dup 12/20/00	S-4 04/09/02	S-4 04/07/05
Low Molecular Weight PAHs																			
Naphthalene	620	a	0.08			0.03	0.03 J	0.03 J	0.031 J	0.07 J	0.025 J	0.012 U	0.07 J	0.025 J	0.012 U	0.04 J	0.04 J	0.012 U	0.012 U
Acenaphthylene	307	b	0.06			0.02	0.006 J	0.011 U	0.037 J	0.02 J	0.011 U	0.026 J	0.095 U	0.011 U	0.011 U	0.095 U	0.096 U	0.011 U	0.011 U
Acenaphthene	520	a	--			0.04	0.02 J	0.0088 U	0.0088 U	0.02 J	0.0092 U	0.0088 U	0.095 U	0.0089 U	0.0088 U	0.14	0.12	0.085 J	0.0088 U
Fluorene	39	b	--			0.08	0.02 J	0.012 U	0.026 J	0.04 J	0.013 U	0.012 U	0.02 J	0.013 U	0.012 U	0.36	0.34	0.17 J	0.012 U
Phenanthrene	19	b	0.08			0.14	0.07 J	0.032 J	0.190 J	0.25	0.043 J	0.045 J	0.20	0.054 J	0.057 J	0.46	0.35	0.073 J	0.032 J
Anthracene	21	b	--			0.01	0.006 U	0.015 U	0.039 J	0.02 J	0.016 U	0.015 U	0.095 U	0.015 U	0.015 U	0.02 J	0.01 J	0.015 U	0.015 U
2-Methylnaphthalene	72	b	--			0.03	0.03 J	0.016 J	0.012 U	0.05 J	0.014 J	0.012 U	0.096	0.012 U	0.012 U	0.09 J	0.10	0.012 U	0.012 U
High Molecular Weight PAHs																			
Fluoranthene	7.1	b	0.07			0.05	0.02 J	0.013 U	0.23	0.099	0.022 J	0.059 J	0.06 J	0.023 J	0.040 J	0.06 J	0.05 J	0.01 U	0.013 U
Pyrene	10.1	b	0.10			0.09	0.02 J	0.015 U	0.28	0.12	0.025 J	0.059 J	0.03 J	0.022 J	0.037 J	0.19	0.16	0.10 J	0.097 J
Benz(a)anthracene	2.2	b	--			0.02	0.005 U	0.012 U	0.081 J	0.03 J	0.013 U	0.012 U	0.007 J	0.012 U	0.012 U	0.03 J	0.02 J	0.012 U	0.012 U
Chrysene	2.0	b	--			0.04	0.008 J	0.014 U	0.140 J	0.06 J	0.015 U	0.014 U	0.03 J	0.015 U	0.014 U	0.12	0.09 J	0.014 U	0.014 U
Benzo(b)fluoranthene	0.68	b	--			0.03	0.006 J	0.020 U	0.15 J	0.04 J	0.021 U	0.021 J	0.01 J	0.020 U	0.020 U	0.03 J	0.03 J	0.020 U	0.020 U
Benzo(k)fluoranthene	0.64	b	--			0.01	0.004 J	0.020 U	0.049 J	0.03 J	0.021 U	0.020 U	0.008 J	0.020 U	0.020 U	0.02 J	0.01 J	0.020 U	0.020 U
Benzo(a)pyrene	0.96	b	--			0.02	0.006 U	0.016 U	0.10 J	0.03 J	0.017 U	0.020 U	0.095 U	0.017 U	0.016 U	0.03 J	0.02 J	0.016 U	0.016 U
Indeno(1,2,3-cd)pyrene	0.28	b	--			0.02	0.006 J	0.024 U	0.089 J	0.04 J	0.026 U	0.020 U	0.01 J	0.025 U	0.024 U	0.02 J	0.02 J	0.024 U	0.024 U
Dibenz(a,h)anthracene	0.28	b	--			0.02	0.004 U	0.031 U	0.031 U	0.009 J	0.032 U	0.020 U	0.19 U	0.031 U	0.031 U	0.009 J	0.008 J	0.031 U	0.031 U
Benzo(g,h,i)perylene	0.44	b	--			0.03	0.007 J	0.017 U	0.14 J	0.06 J	0.018 U	0.020 U	0.01 J	0.017 U	0.017 U	0.04 J	0.03 J	0.017 U	0.017 U
Total PAHs			0.94			0.68													
Miscellaneous Semivolatiles																			
3- and 4-Methylphenol	--					0.17	0.3 J	0.23 J	0.051 U	0.49	0.089 J	0.051 U	0.48 U	0.220 J	0.120 J	0.2 J	0.2 J	0.051 U	0.051 U
Dibenzofuran	3.7	c				0.03	0.01 J	0.014 U	0.014 U	0.02 J	0.014 U	0.014 U	0.01 U	0.019 J	0.014 U	0.13	0.11	0.11 J	0.014 U
Butyl Benzyl Phthalate	3.0	a				0.10	0.1 J	0.19 J	0.20	0.1 J	0.05 J	0.076 J	0.08 J	0.092 J	0.089 J	0.05 J	0.04 J	0.14 J	0.100 J
Di-n-octyl Phthalate	3.0	a				0.13	0.003 U	0.032 U	0.032 U	0.003 U	0.032 U	0.11 J	0.95 U	0.033 U	0.032 U	0.95 U	0.96 U	0.032 U	0.032 U
Metals*																			
Arsenic - Total	--		4.5	2		0.3	0.5 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U		0.5 U	0.5 U			0.6	0.5
Arsenic - Dissolved	150	d	4.0			0.3			0.5 U		0.5 U		1 U		0.5 U	0.5 U	0.5 U		0.5 U
Chromium - Total	--		14	1		1.7	0.4	0.4	7.0	2.0	1.1	0.6		1.2	1.9			0.9	1.1
Chromium - Dissolved	24	d	3			1.1			1.3		0.7		2.9		1.3	0.8	0.6		0.2
Copper - Total	--		25	9	100	8	3.8	3.7	13.5	9.9	10.3	6.0		13	8.6			9.0	8.3
Copper - Dissolved	2.7	d	9			10			7.9		9.4		30		7.1	4.9	4.7		4.4
Cadmium - Total	--		1.1	<1		0.4			0.16		0.07				1.05				0.19
Cadmium - Dissolved	0.094	d	0.6			0.3			0.07		0.05				0.96				0.09
Lead - Total	--		38	13	400	10			27.1		2.33				4.14				6.15
Lead - Dissolved	0.54	d	3			0.6			0.61		0.7				1.06				0.09
Zinc - Total	--		220	38	600	104			86.9		51.1				189				89.80
Zinc - Dissolved	36	d	113			80			47.8		42.9				182				46.80

Notes:
U = Not detected at indicated quantitation limit; J = Estimated concentration
* Metals criteria are dissolved basis; if no dissolved data available, metals are compared to total concentrations
(a) DEQ 2004 AWQC
(b) EPA 2003 Final Chronic Values
(c) Oak Ridge National Lab Tier II Secondary Chronic Value
(d) EPA, 2002; National Recommended Water Quality Criteria
(e) City of Portland, 2004b, BES database transmittal on 1-30-04
(f) Fuhrer et al., 1996; DEQ, 2002; 90th percentile value for Lower Columbia Basin

Table 15
Comparative Loading Analysis
McCall Portland Site

Input Parameters

Portland Annual Rainfall	37	inches(1)
Portland Metro Impervious Acreage	17,600	acres(1)
Portland Metro Impervious Runoff Coef.	0.75	unitless
McCall Total Acreage	36	acres
McCall Runoff Coefficient	0.75	unitless
McCall Mean Groundwater Gradient	0.025	ft/ft
McCall Mean Hydraulic Conductivitiy	0.013	ft/min
McCall Length of Shoreline	1,500	feet
McCall Saturated Fill Thickness	10	feet
Mean Annual Willamette River Dischg.	33,000	cfs(2)

Average Water Concentrations (µg/l)

	COP Municipal Stormwater(3)	Willamette R. Background(4)	McCall Stormwater(5)	McCall Groundwater(6)
Metals				
Arsenic	4.5	2	0.3	22
Chromium	14	1	2	1.4
Copper	25	9	8	0.8
Lead	38	13	10	
Zinc	220	38	104	
PAHs				
Naphthalene	0.08		0.03	0.03
Acenaphthylene	0.06		0.02	0.01
Phenanthrene	0.08		0.14	0.14
Fluoranthene	0.07		0.05	0.05
Pyrene	0.10		0.09	0.08
Benzo(a)pyrene	0.05		0.02	0.02
Total PAHs	0.94		0.68	0.68
Average Flow (MGY)	13,261	7,800,000	27	19

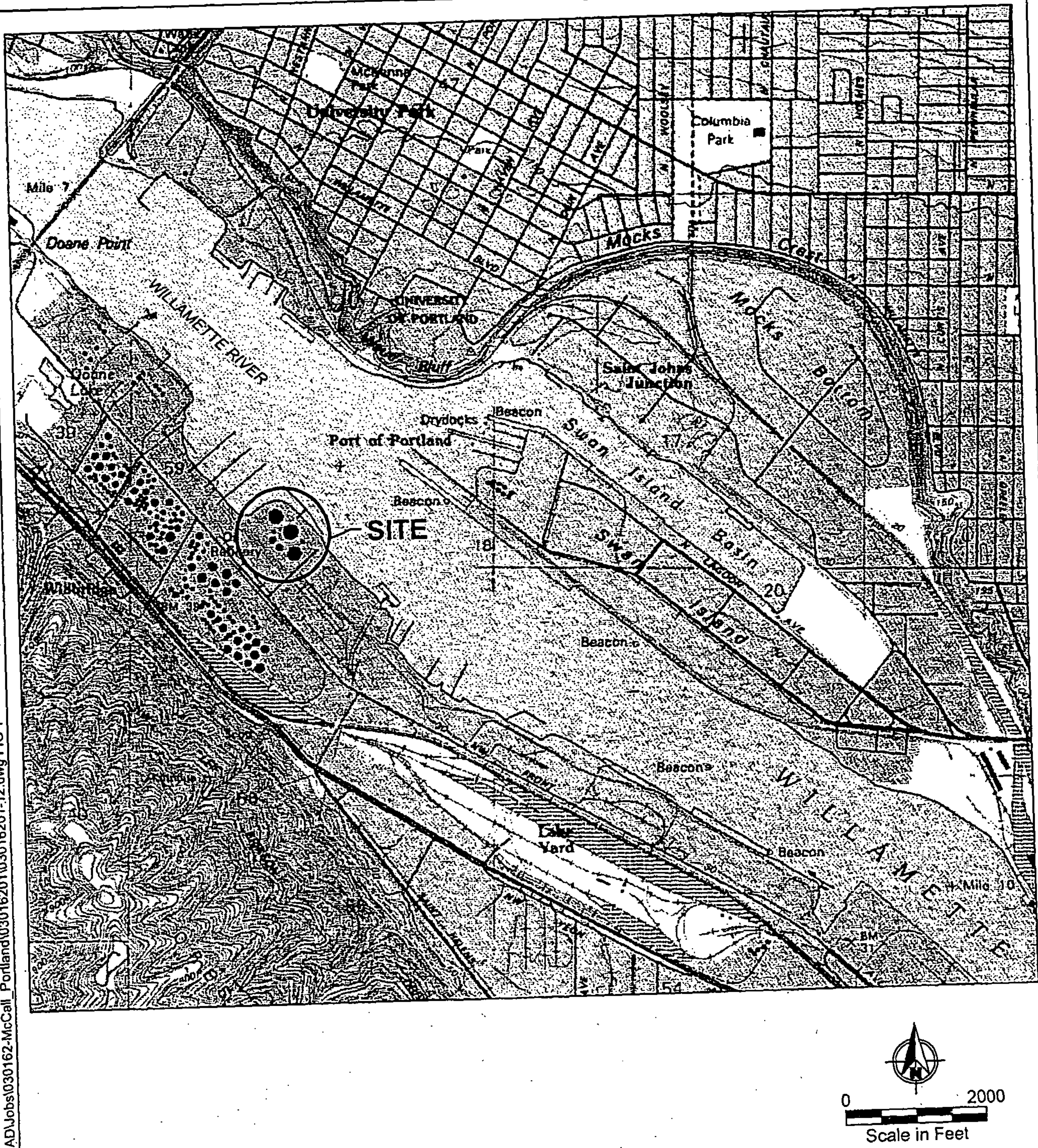
Data Sources:

(1) City of Portland, 2004a, Programmatic Source Control RI Work Plan
(2) Average annual discharge at Willamette River Portland USGS #14211720
(3) City of Portland, 2004b, BES database transmittal on 1-30-04
(4) 90th percentile value, Lower Columbia Basin, per Fuhrer et al, 1996; DEQ, 2002
(5) Average McCall RI stormwater concentration, Table 14
(6) Average McCall dissolved metal groundwater concentration in shoreline wells, Table 13

NA = Not available

MGY= million gallons/year

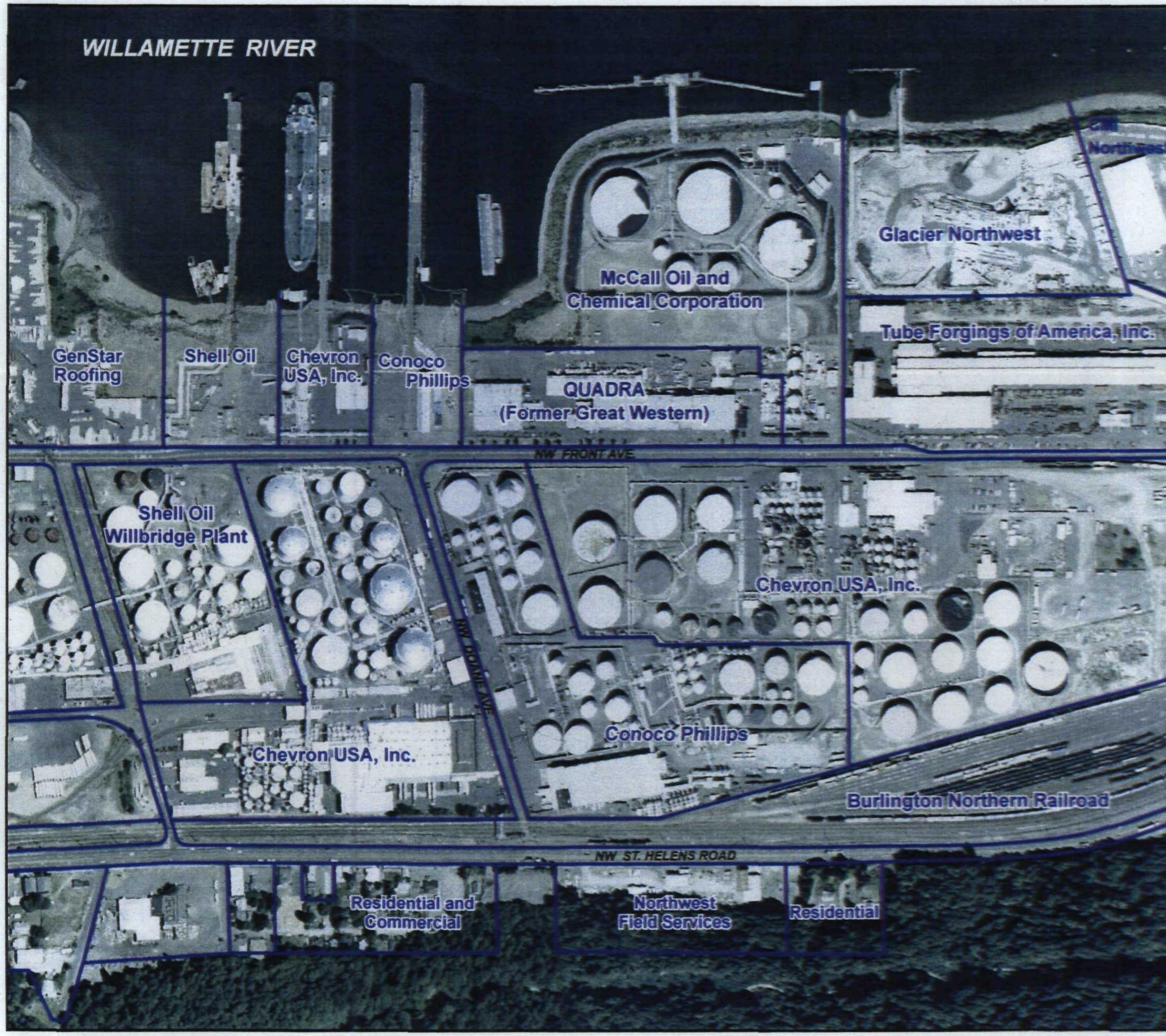
FIGURES

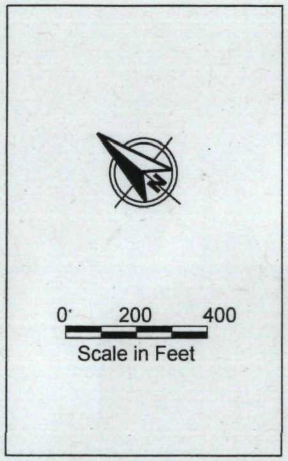


May 09, 2003 2:16pm cdavidson I:\CAD\Jobs\030162-McCall_Portland\03016201\03016201-12.dwg FIG 1

Figure 1
Vicinity Map
McCall Oil and Chemical

ANCHOR ENVIRONMENTAL, L.L.C.



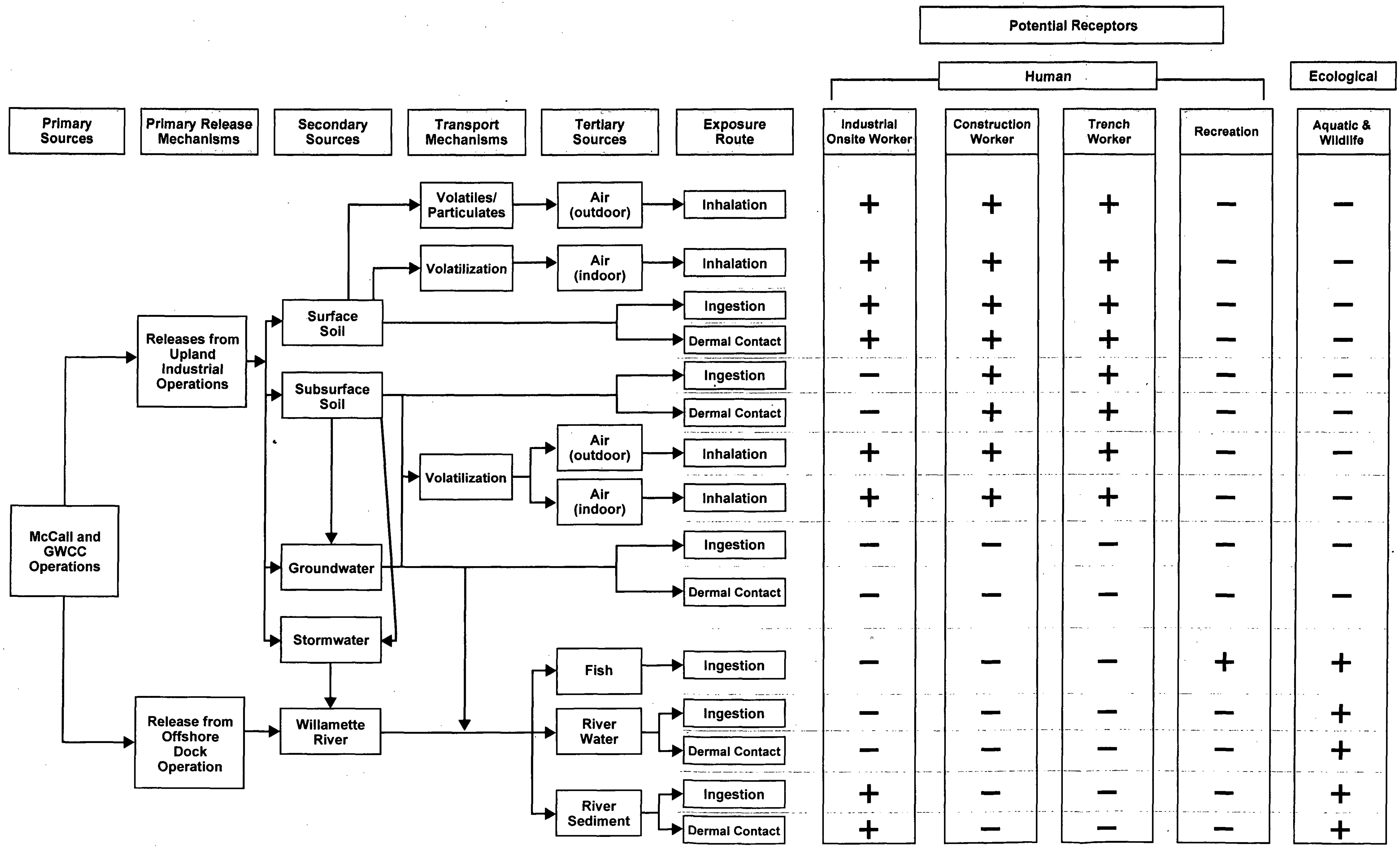


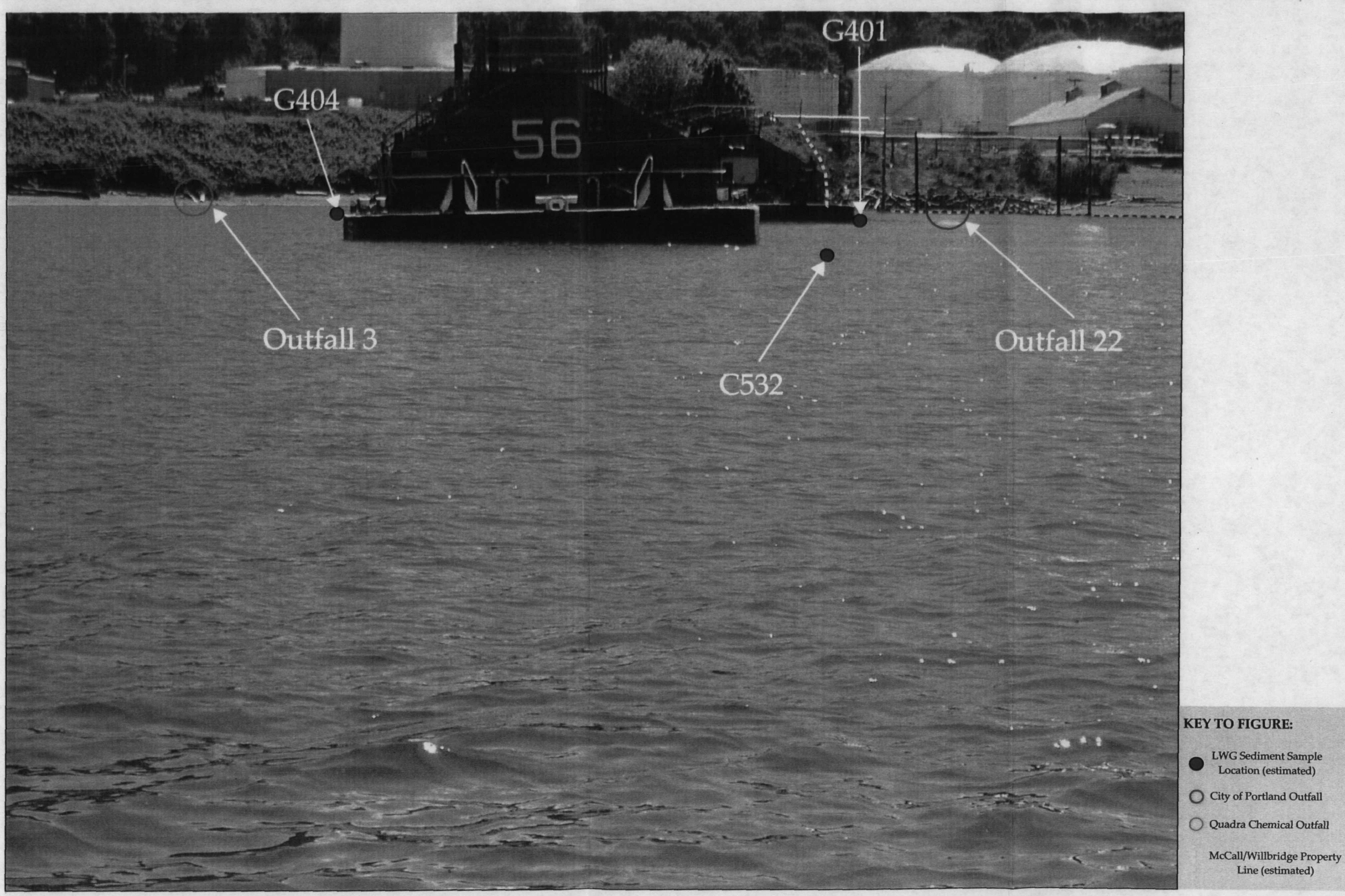
* Land use based on 1993 assessment records

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 2
Land Use Map
McCall Oil and Chemical

Figure 3
McCall Oil & Chemical Conceptual Site Model





Jun 23, 2006 9:59am cdavidson K:\Jobs\030162-McCall_Portland\03016201\03016201-21.dwg OUTFALL 3 AND 22

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 4
Quadra Outfall 3 and COP Outfall 22
McCall Oil and Chemical

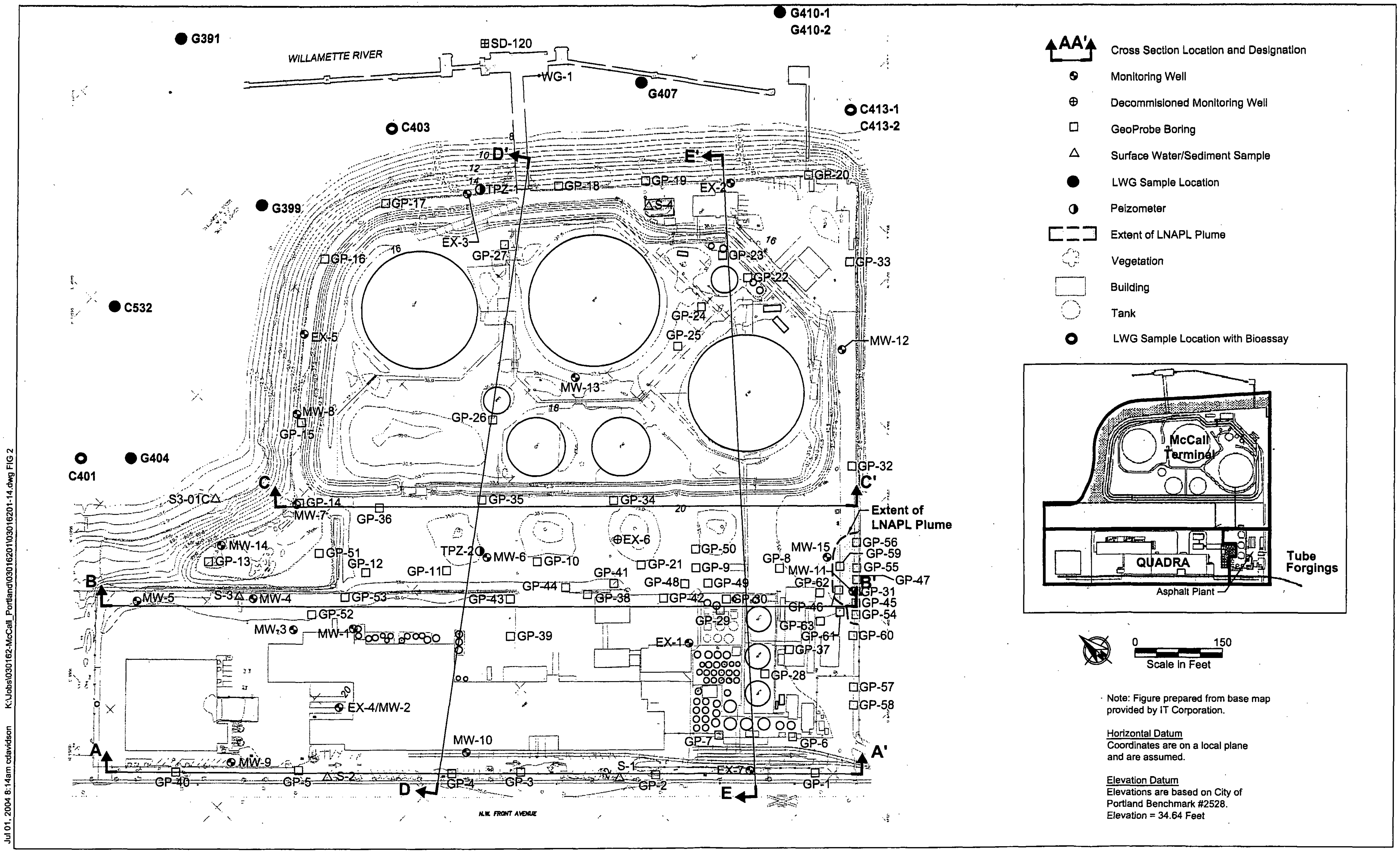


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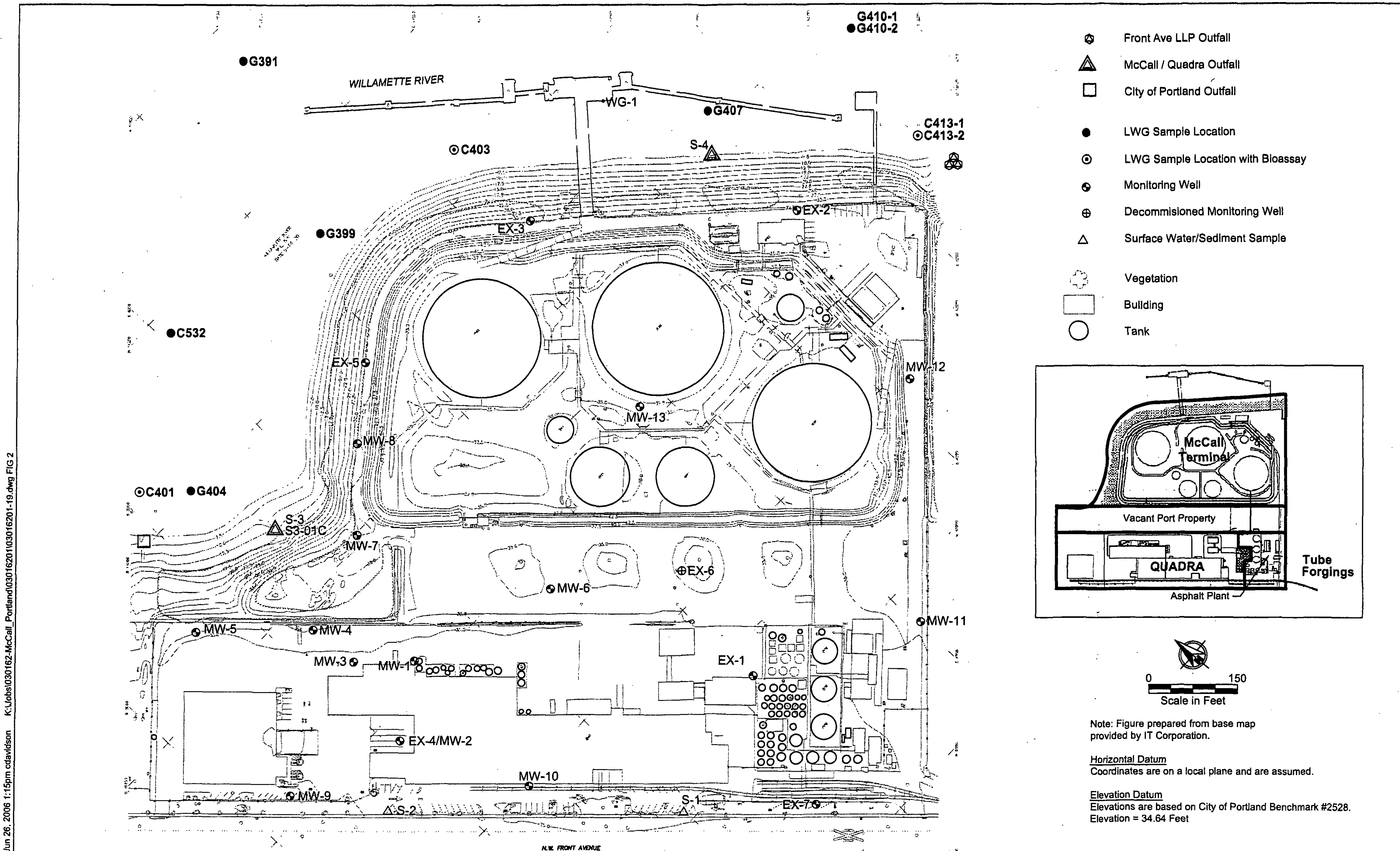
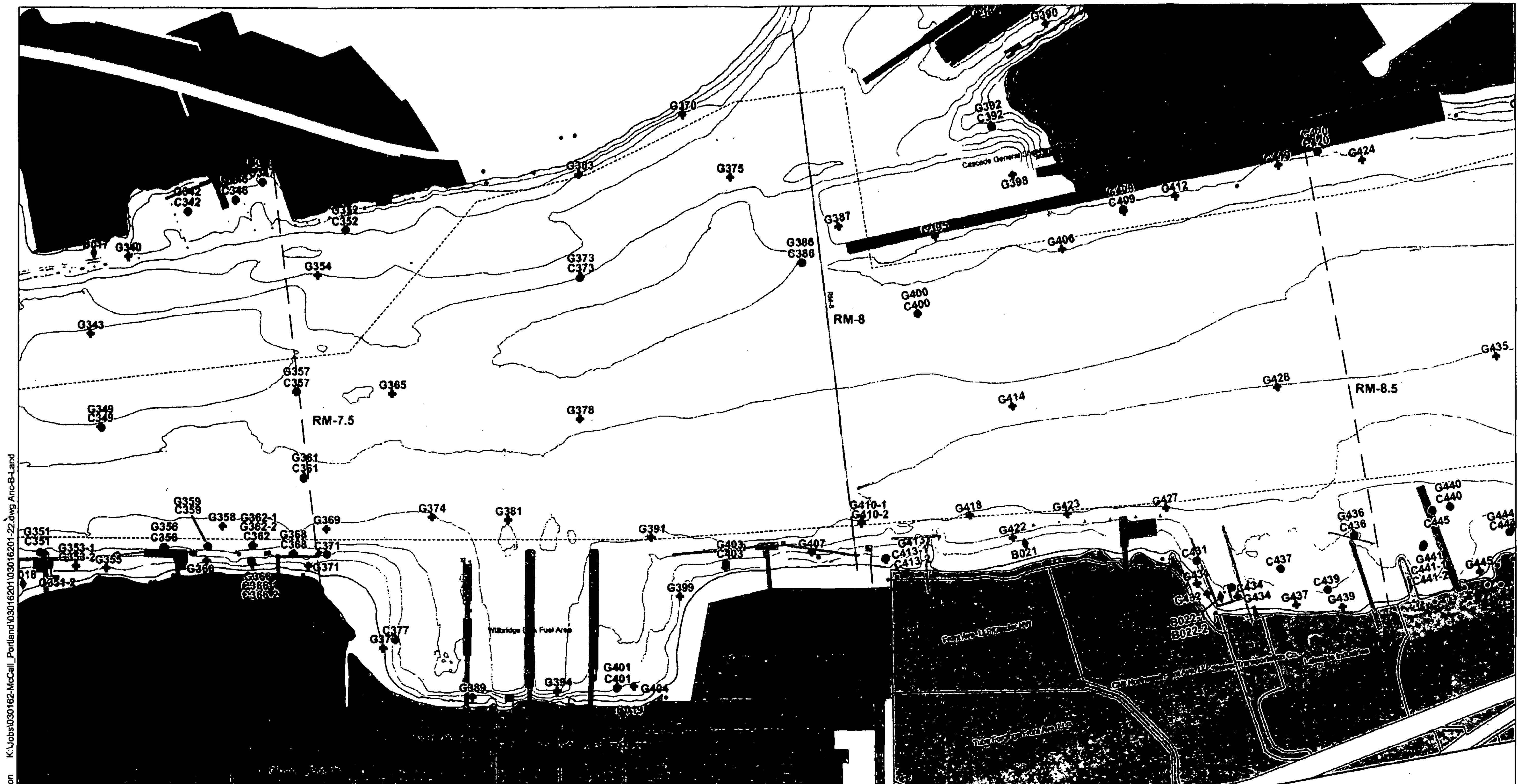
Figure 5
Boring and Well Location Map
McCall Oil and Chemical



Jun 26, 2006 1:15pm cdavidson K:\Jobs\030162-McCall_Portland\03016201\03016201-19.dwg FIG 2

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 6
Sediment Sampling and Monitoring Well Location Map
McCall Oil and Chemical



Not to Scale

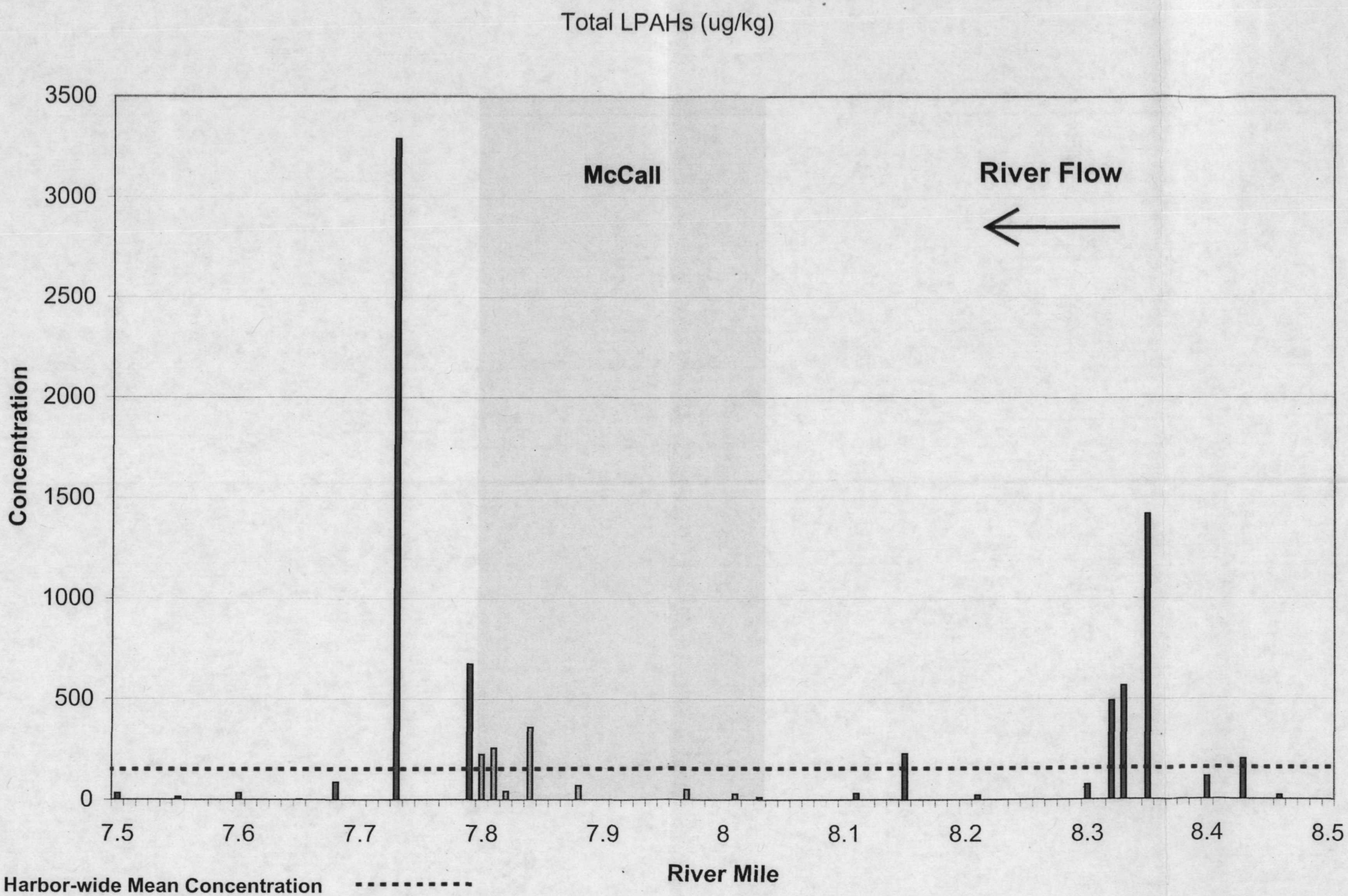
Legend

- Subsurface Sample Location
- Surface Sample Location
- Beach Sample Location
- Outfall Location

Source: Portland Harbor RI/FS Round 2A Sediment Site Characterization Summary Report Map Folio Draft, July 15, 2005.

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 7
LWG Round 2A Sample Locations
Willamette River Impact Assessment
McCall Oil and Chemical



Harbor-wide Mean Concentration

(25800 ug/kg--not shown)

Harbor-wide Median Concentration

Figure 8.1

LWG Sediment Chemistry Data

McCall Oil and Chemical

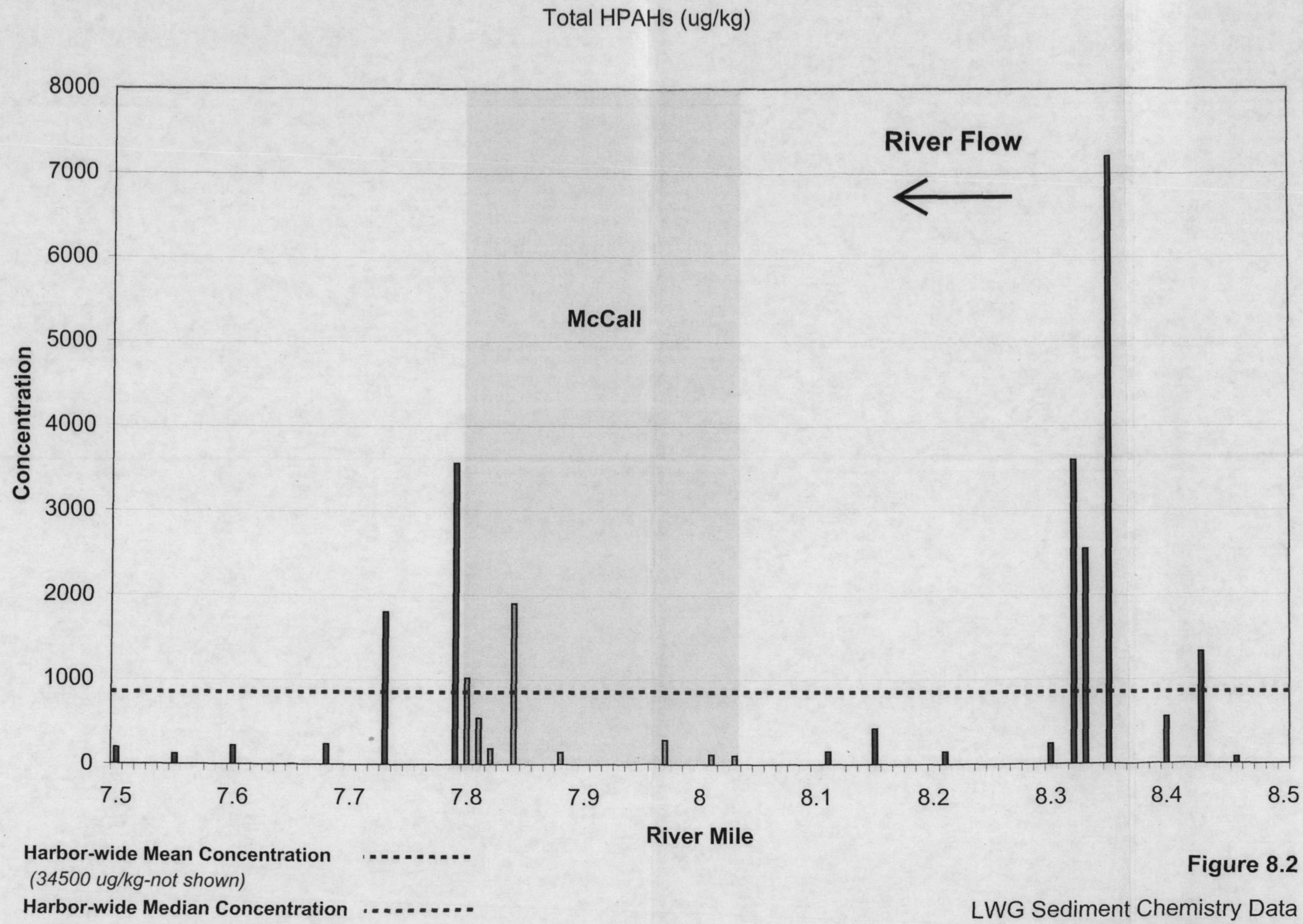
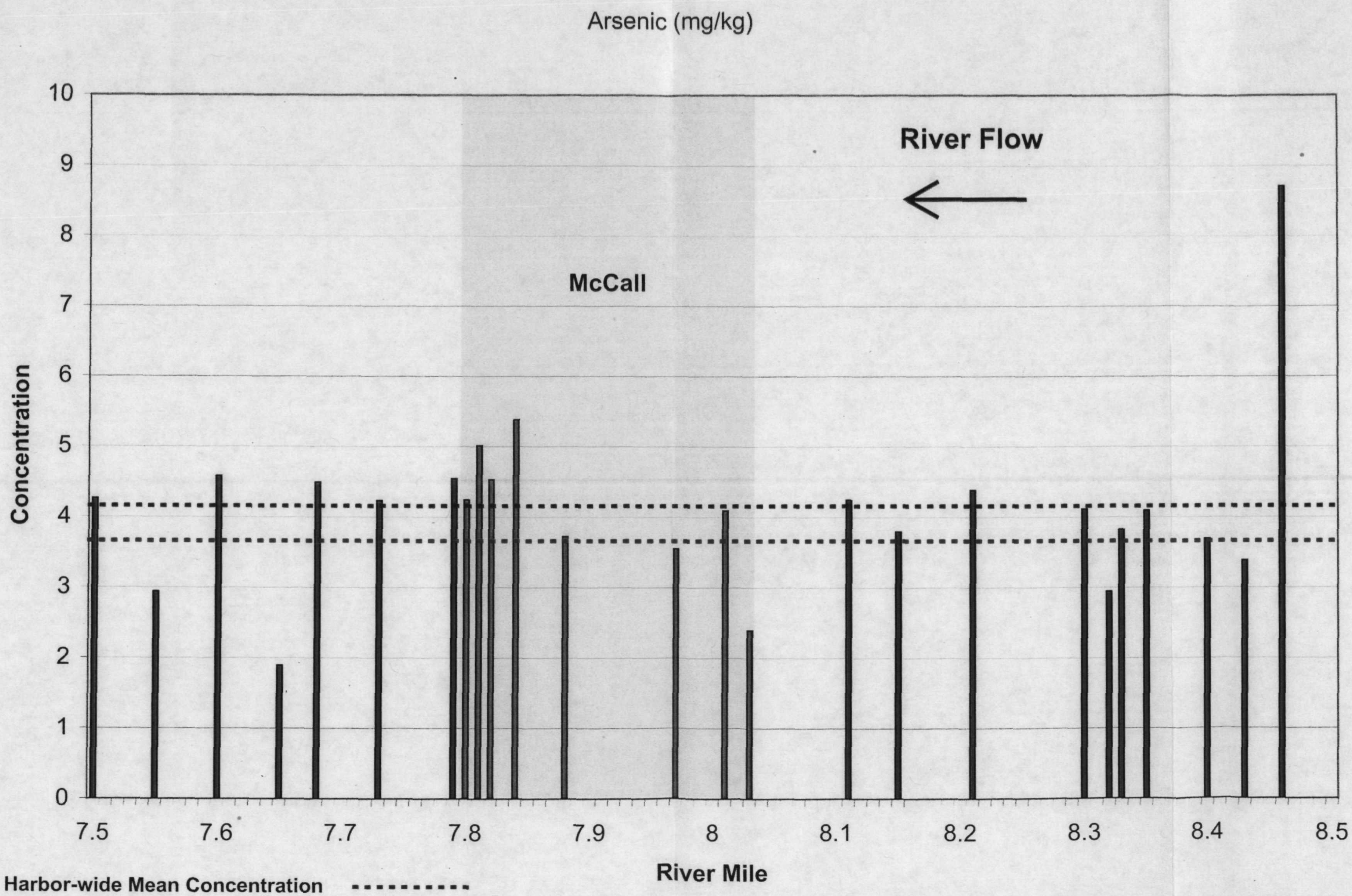


Figure 8.2

LWG Sediment Chemistry Data
McCall Oil and Chemical



Harbor-wide Mean Concentration - - - - - - - - -

Harbor-wide Median Concentration - - - - - - - - -

Figure 8.3

LWG Sediment Chemistry Data
McCall Oil and Chemical

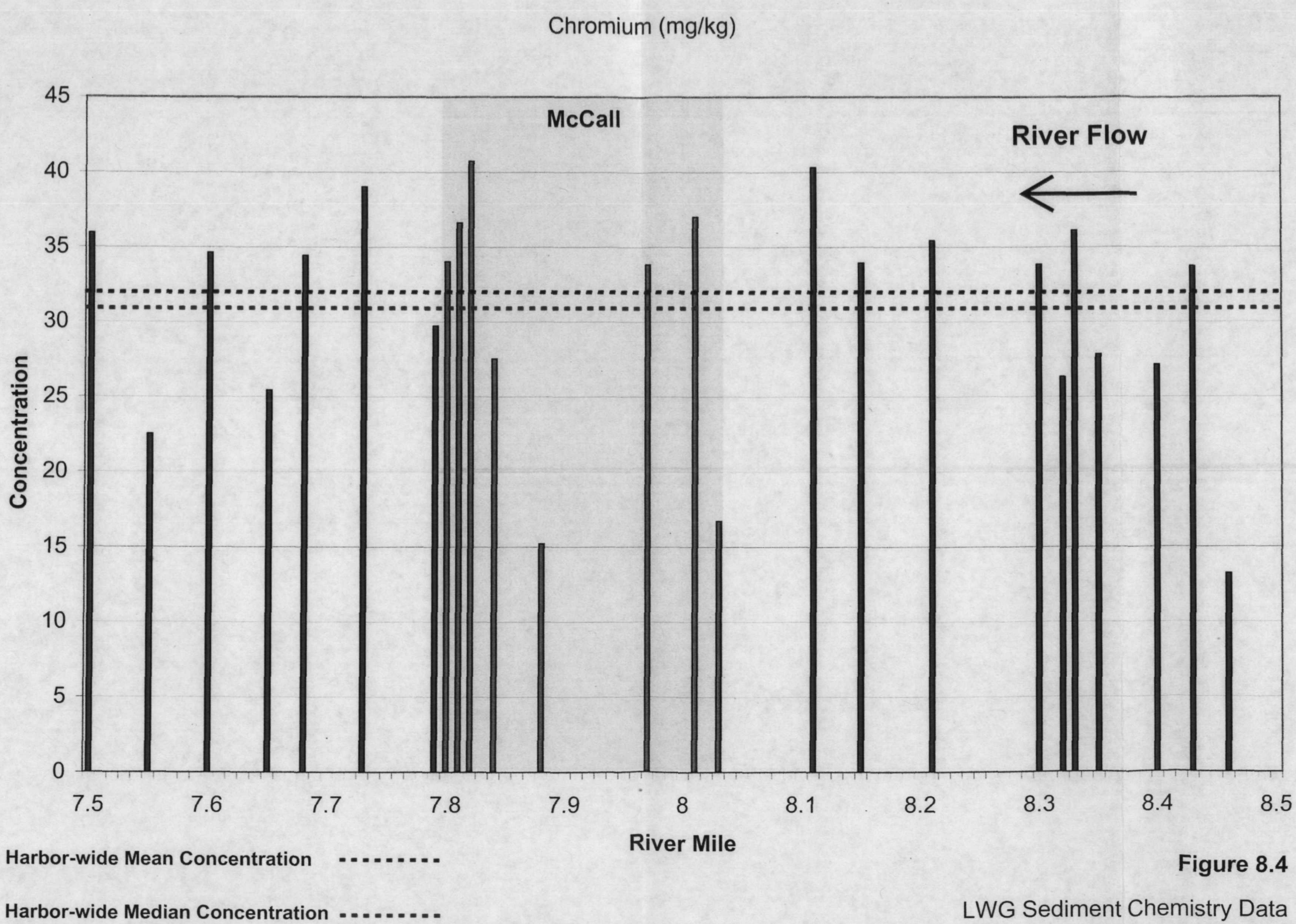
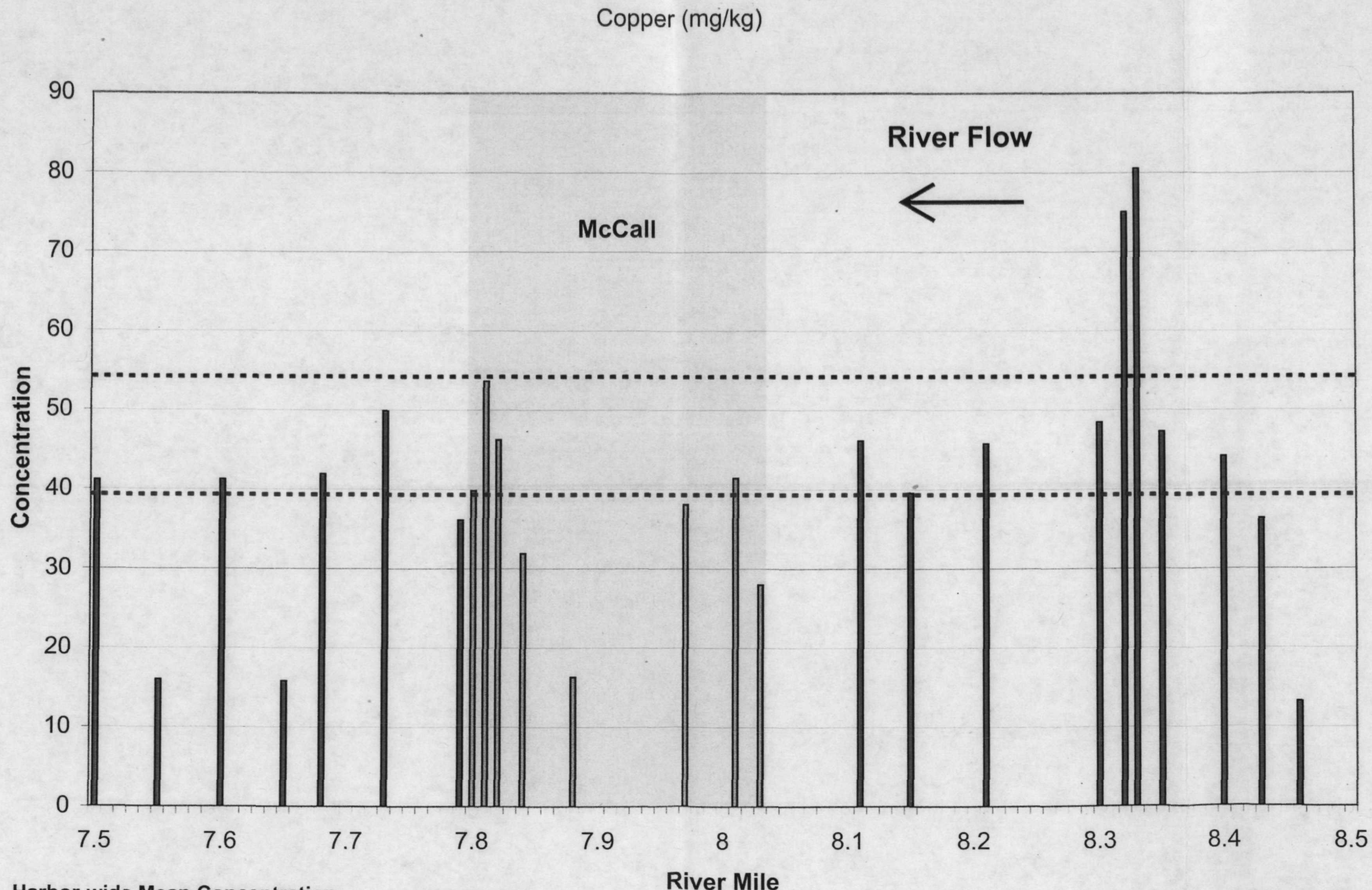


Figure 8.4

LWG Sediment Chemistry Data
McCall Oil and Chemical



Harbor-wide Mean Concentration

Harbor-wide Median Concentration

Figure 8.5

LWG Sediment Chemistry Data
McCall Oil and Chemical

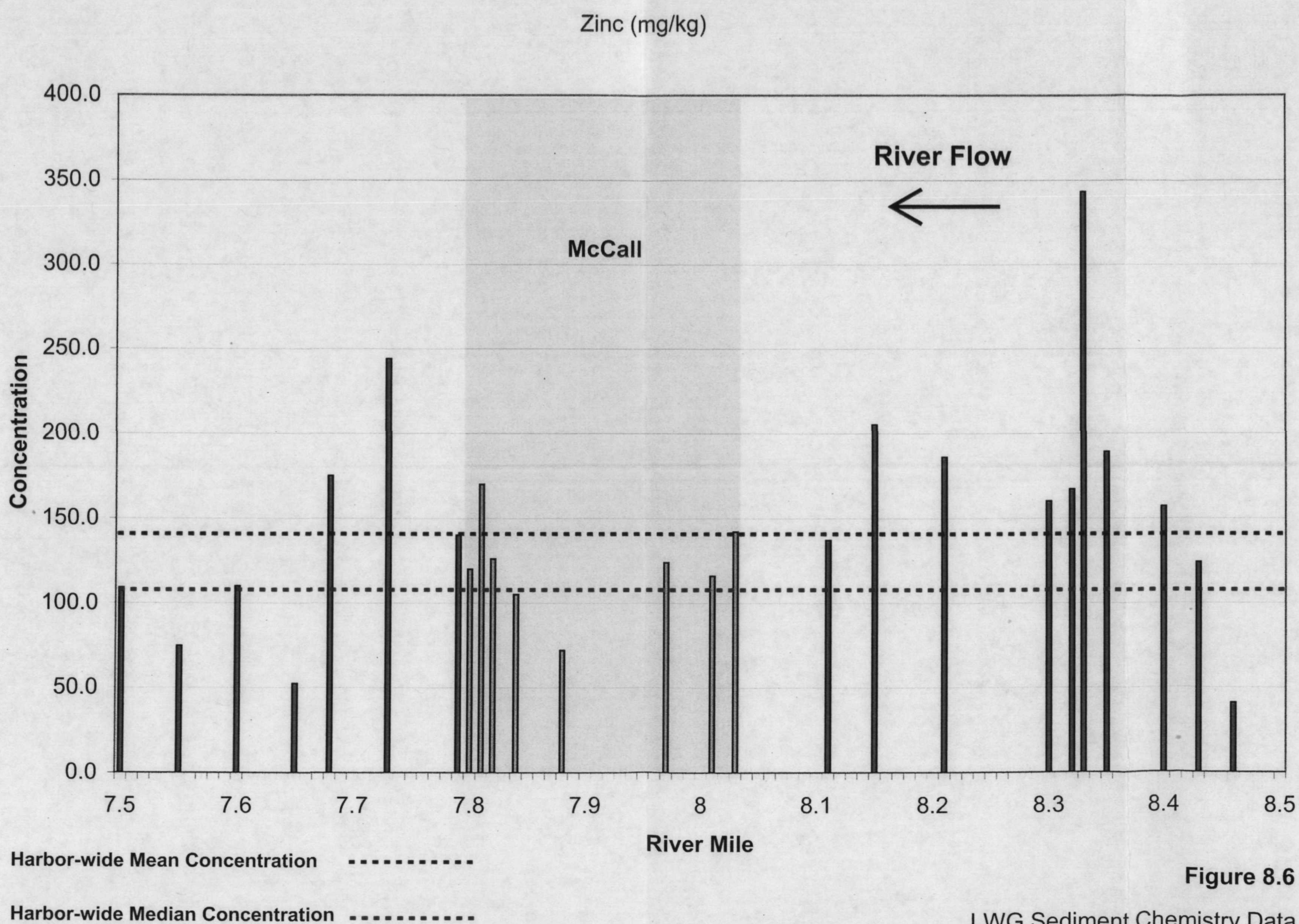


Figure 8.6

LWG Sediment Chemistry Data
McCall Oil and Chemical

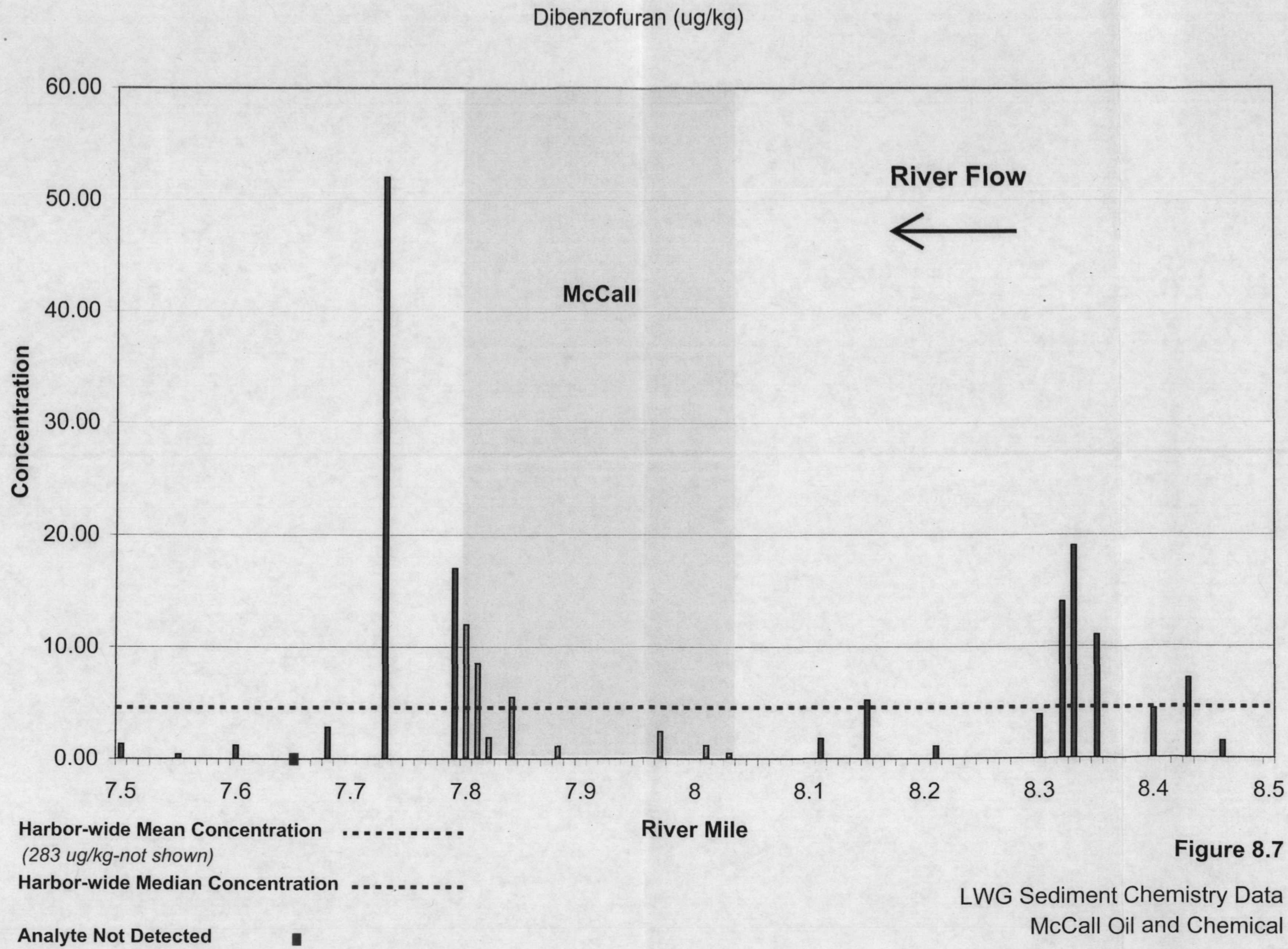


Figure 8.7

LWG Sediment Chemistry Data
McCall Oil and Chemical

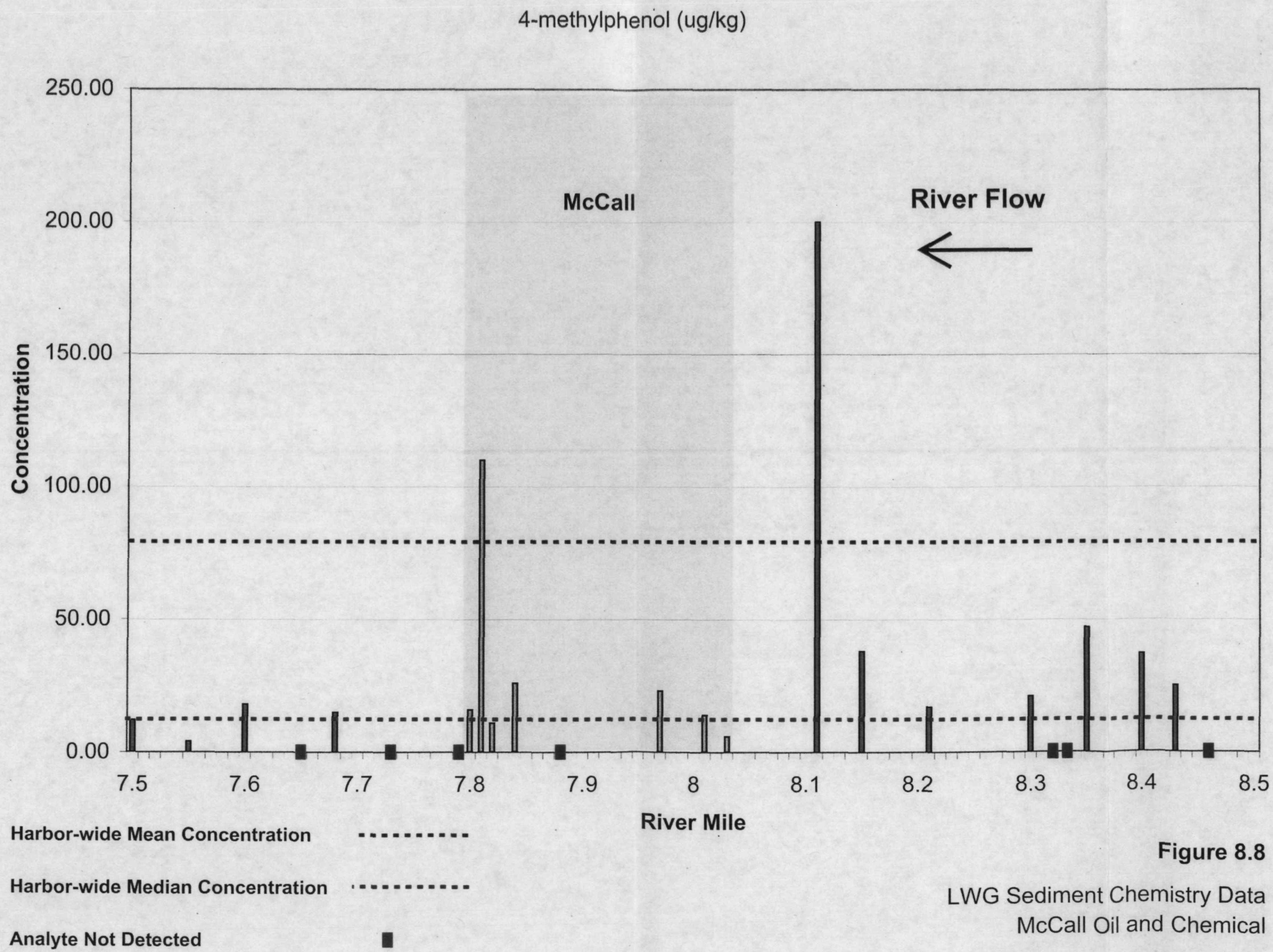
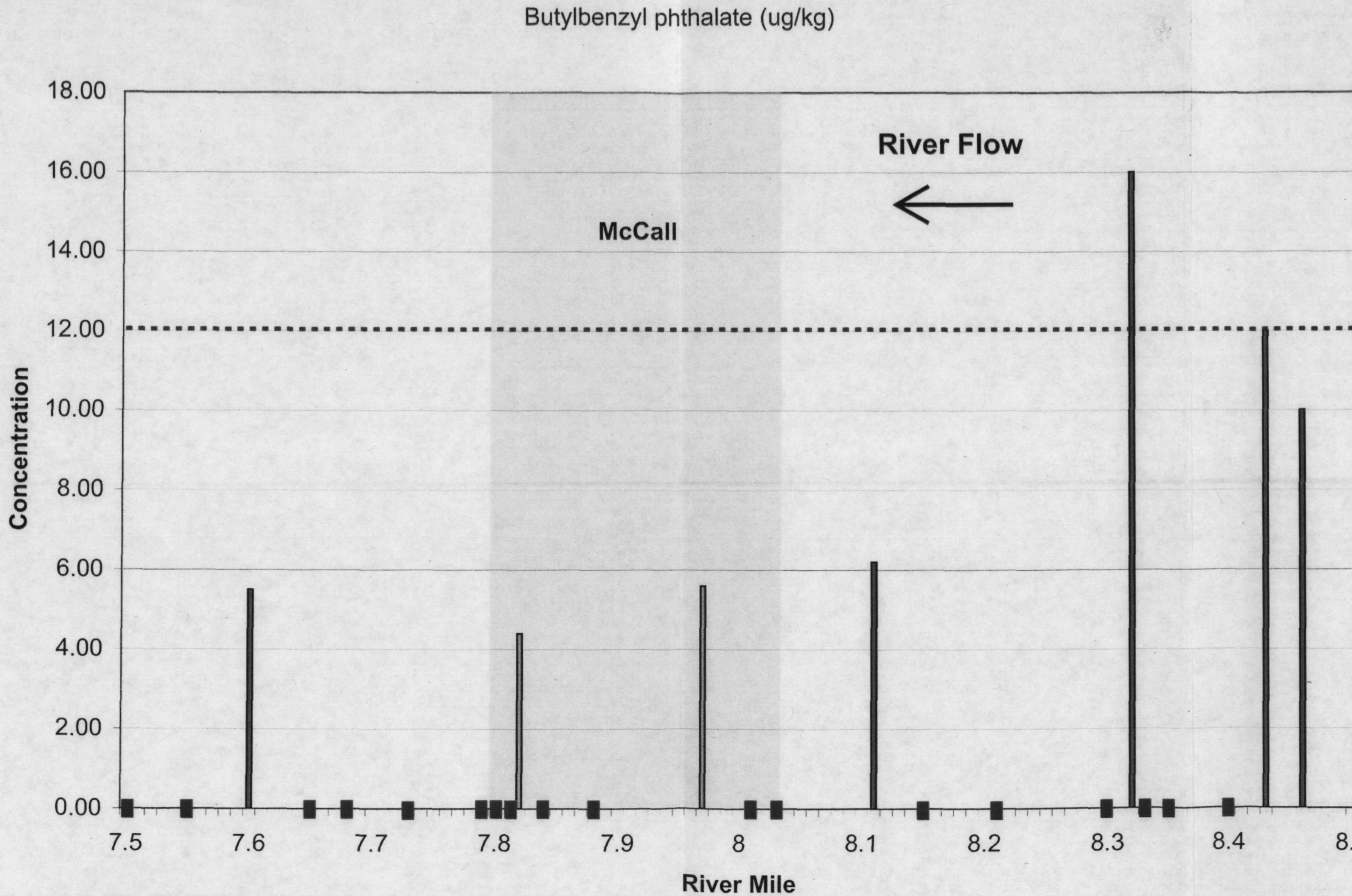


Figure 8.8

LWG Sediment Chemistry Data
McCall Oil and Chemical



Harbor-wide Mean Concentration

(72.6 ug/kg-not shown)

Harbor-wide Median Concentration

Analyte Not Detected

Figure 8.9

LWG Sediment Chemistry Data

McCall Oil and Chemical

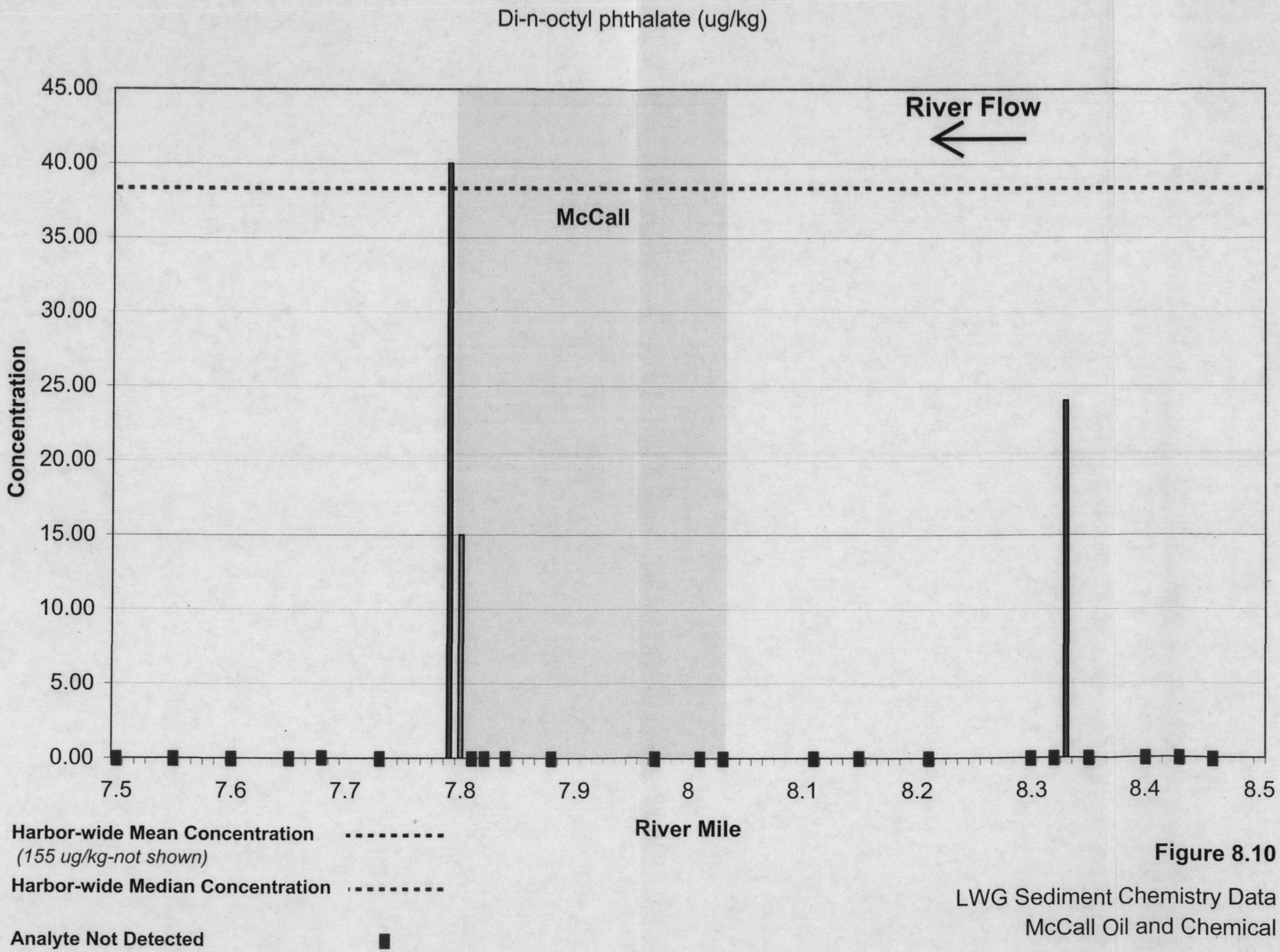
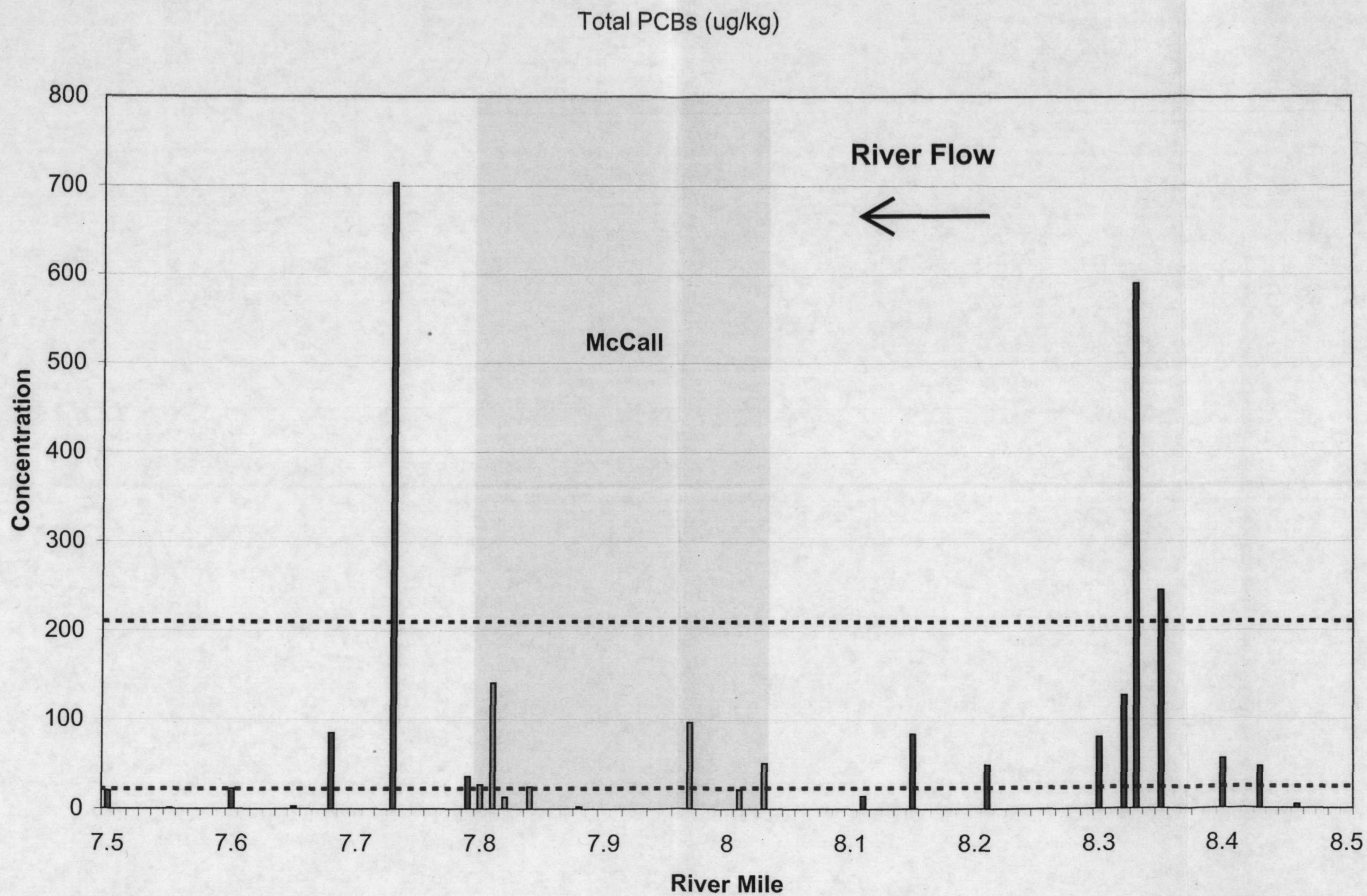


Figure 8.10

LWG Sediment Chemistry Data
McCall Oil and Chemical

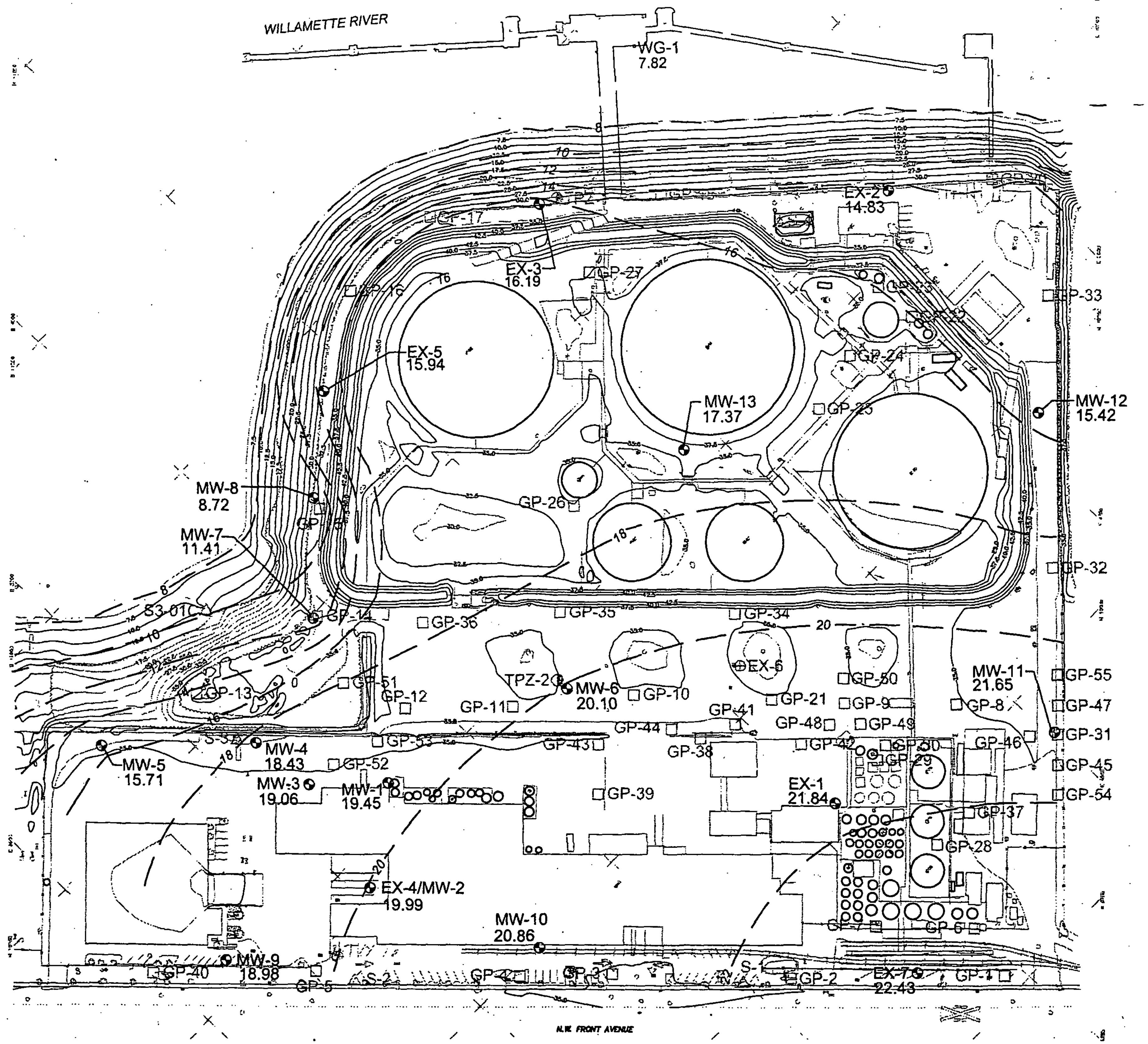


Harbor-wide Mean Concentration - - - - - - - -

Harbor-wide Median Concentration - - - - - - - -

Figure 8.11

LWG Sediment Chemistry Data
McCall Oil and Chemical



Groundwater Elevation Contour in Feet

15.42 Groundwater Elevation in Feet

Monitoring Well

Decommisioned Monitoring Well

GeoProbe Boring

Surface Water/Sediment Sample

Peizometer

Vegetation

Building

Tank

Horizontal Datum
Coordinates are on a local plane and are assumed.

Elevation Datum
Elevations are based on City of Portland Benchmark #2528. Elevation = 34.64 Feet

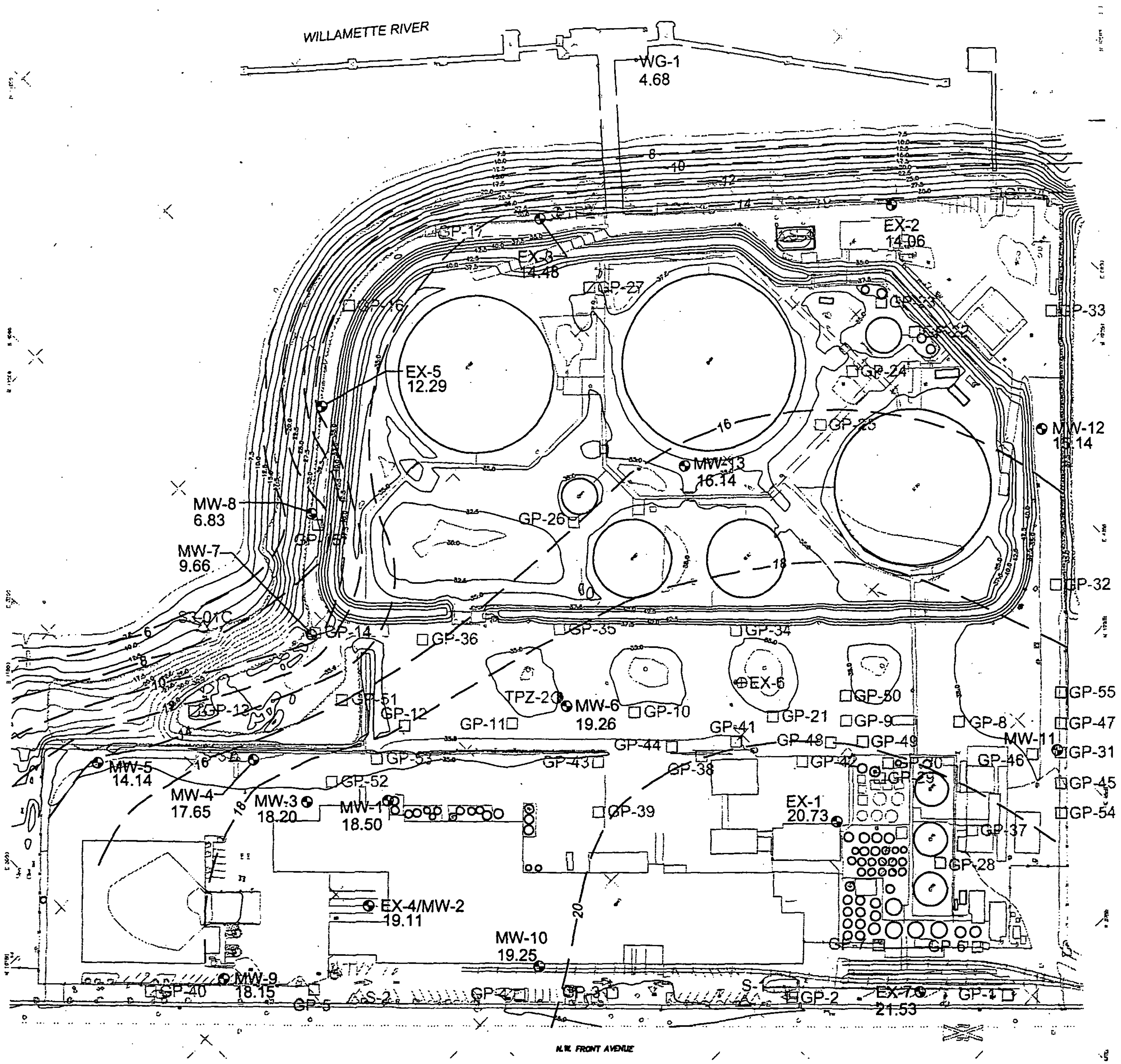
0 150
Scale in Feet

Note: Figure prepared from base map provided by IT Corporation.

May 12, 2003 8:35am cdavidson I:\CAD\Jobs\030162-McCall_Portland\030162\01\03016201-01.dwg FIG 4

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 9
Groundwater Potentiometric Surface Contour Map
March 2002
McCall Oil and Chemical



Groundwater Elevation Contour in Feet

15.42 Groundwater Elevation in Feet

Monitoring Well

Decommisioned Monitoring Well

GeoProbe Boring

Surface Water/Sediment Sample

Peizometer

Vegetation

Building

Tank

Horizontal Datum
Coordinates are on a local plane and are assumed.

Elevation Datum
Elevations are based on City of Portland Benchmark #2528. Elevation = 34.64 Feet

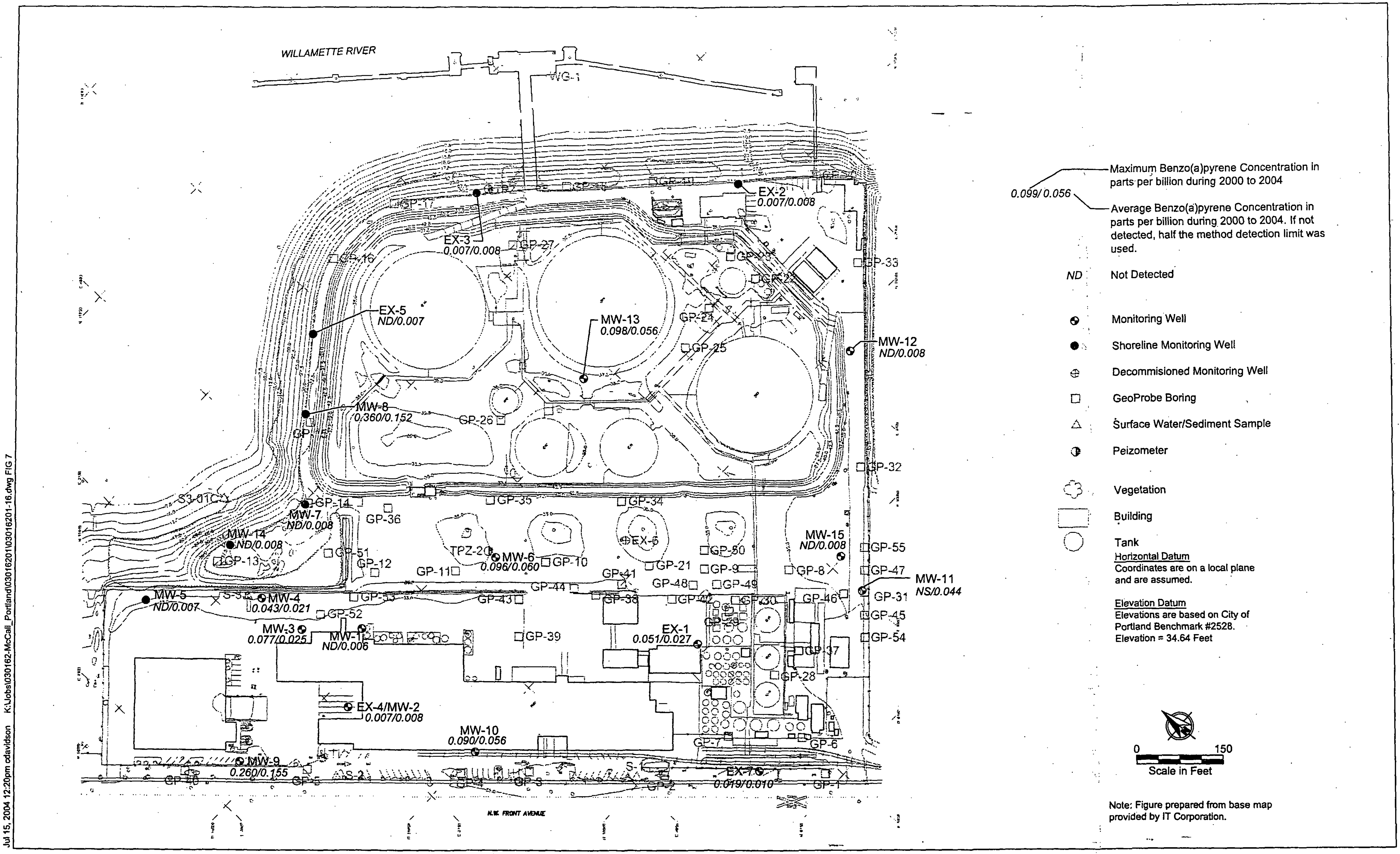
0 150
Scale in Feet

Note: Figure prepared from base map provided by IT Corporation.

May 12, 2003 8:38am cdavidson I:\CADJobs\030162-McCall_Portland\030162\01030162\01-02.dwg FIG 5

ANCHOR ENVIRONMENTAL, L.L.C.

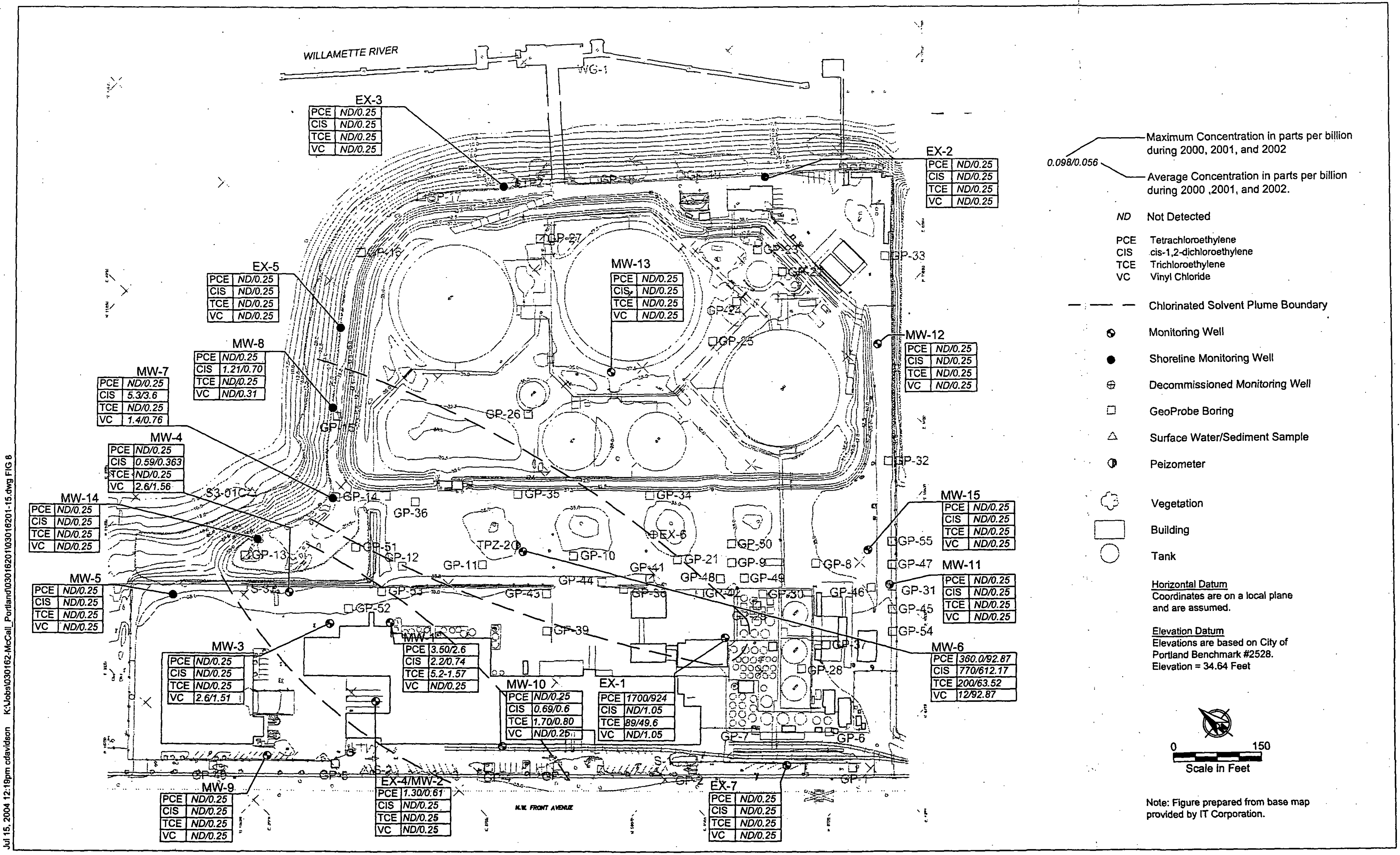
Figure 10
Groundwater Potentiometric Surface Contour Map
October 2002
McCall Oil and Chemical



Jul 15, 2004 12:20pm cdavidson K:\Jobs\030162-McCall_Portland\03016201\03016201-16.dwg FIG 7

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 11
Benzo(a)pyrene in Groundwater
McCall Oil and Chemical



Jul 15, 2004 12:19pm cdavidson K:\Jobs\030162-McCall_Portland\03016201\03016201-15.dwg FIG 8

ANCHOR ENVIRONMENTAL, L.L.C.

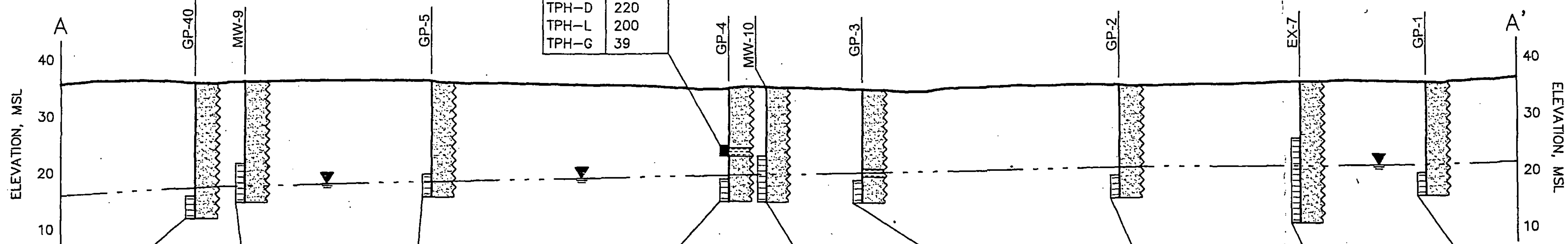
Figure 12
Chlorinated Solvents in Groundwater
McCall Oil and Chemical

APPENDIX A

VARIOUS FIGURES FROM 2004 MCCALL RI REPORT

1. X-Sections, RI Figures 6A through 6E
2. TPH groundwater time trend concentration graph from RI Appendix
3. LPAH and HPAH groundwater time trend graphs from RI Appendix

GP-4	
VOCs	ND
HPAH	730
LPAH	150
SVOCs	
4M	ND
DB	ND
BBP	ND
DNP	ND
TPH-D	220
TPH-L	200
TPH-G	39



	GP-40	MW-9 (1/22/02)	GP-5	GP-4	MW-10 (1/22/02)	GP-3	GP-2	EX-7 (12/20/00)	GP-1
VOCs	ND	ND	ND	ND	0.57	ND	ND	ND	ND
HPAH	2.18	1.72	0.19	61.5	0.55	0.33	3.52	0.016	1.05
LPAH	0.67	0.71	0.378	646	0.30	26.69	0.65	ND	0.46
SVOCs									
4M	0.04	ND	0.04	ND	ND	0.03	0.02	ND	0.07
DB	0.01	ND	ND	19	ND	1.0	0.01	ND	0.01
BBP	1.00	ND	0.01	ND	0.045	0.02	0.30	ND	0.08
DNP	ND	MD	ND	ND	ND	ND	ND	ND	ND
TPH-D	640	480	430	7100	250	280	ND	ND	ND
TPH-L	ND	310	300	4400	510	ND	ND	ND	ND
TPH-G	ND	140	620	2500	ND	170	130	ND	ND

TABLE DESCRIPTIONS

GP-1	WELL NAME
VOCs	TOTAL CHLORINATED VOLATILE ORGANIC COMPOUNDS
HPAH	HEAVY POLYNUCLEAR AROMATIC HYDROCARBONS
LPAH	LIGHT POLYNUCLEAR AROMATIC HYDROCARBONS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
4M	4-METHYLPHENOL
DB	DIBENZOFURAN
BBP	BUTYL BENZYL PHTHALATE
DNP	DI-N-OCTYL PHTHALATE
TPH-D	TOTAL PETROLEUM HYDROCARBONS – DIESEL
TPH-L	TOTAL PETROLEUM HYDROCARBONS – LUBE OIL
TPH-G	TOTAL PETROLEUM HYDROCARBONS – GASOLINE

ND – NOT DETECTED
NT – NOT TESTED

GEOLOGY LEGEND:

GRAVEL
SAND
SILTY SAND
SILT
GEOPROBE OR WELL SCREEN
SOIL SAMPLE LOCATION
ESTIMATED WATER TABLE ELEVATION (FT. MSL)

ALL DETECTED CONCENTRATIONS REPORTED IN PARTS PER BILLION, EXCEPT SOIL TPH REPORTED IN PARTS PER MILLION.

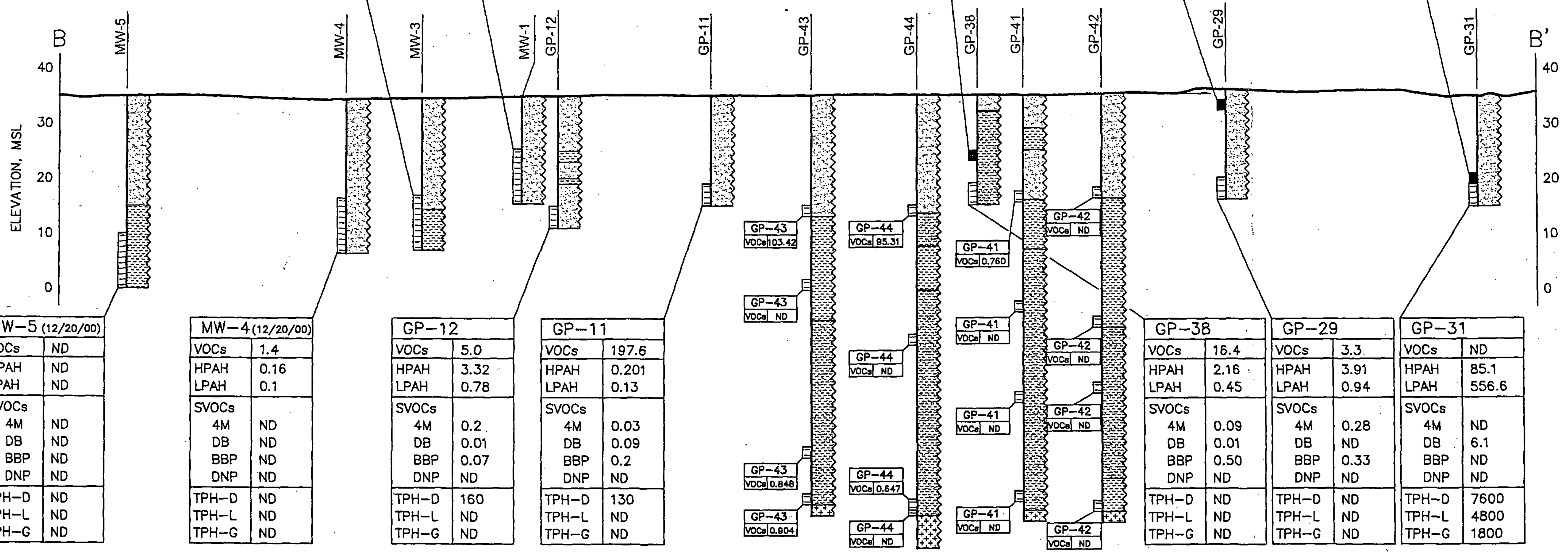
Horizontal Scale in Feet
0 100 200
0 20 40
Vertical Scale in Feet
Vertical Exaggeration x 5

Note: Drawing modified from electronic file provided by IT Corporation.

May 09, 2003 4:40pm cdavidson I:\CADUobs\030162-McCall_Portland\03016201\03016201-03.dwg FIG 6A

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 6A
Cross Section A-A'
McCall Oil and Chemical



	MW-3 (12/20/00)	MW-1 (12/20/00)	GP-38	GP-29	GP-31
VOCs	1.2	4.59	ND	ND	ND
HPAH	0.113	ND	1934	13630	42700
LPAH	0.32	ND	2113	21370	255100
SVOCs					
4M	ND	ND	1000	ND	ND
DB	ND	ND	45	ND	3000
BBP	ND	ND	ND	ND	ND
DNP	ND	ND	ND	ND	ND
TPH-D	ND	ND	930	18000	35000
TPH-L	ND	ND	440	36000	38000
TPH-G	720	1200	47	710	6300

	MW-5 (12/20/00)	MW-4 (12/20/00)	GP-12	GP-11	GP-38	GP-29	GP-31
VOCs	ND	1.4	5.0	197.6	16.4	3.3	ND
HPAH	ND	0.16	3.32	0.201	2.16	3.91	85.1
LPAH	ND	0.1	0.78	0.13	0.45	0.94	556.6
SVOCs							
4M	ND	ND	0.2	0.03	0.09	0.28	ND
DB	ND	ND	0.01	0.09	0.01	ND	6.1
BBP	ND	ND	0.07	0.2	0.50	0.33	ND
DNP	ND	ND	ND	ND	ND	ND	ND
TPH-D	ND	ND	160	130	ND	ND	7600
TPH-L	ND	ND	ND	ND	ND	ND	4800
TPH-G	ND	ND	ND	ND	ND	ND	1800

TABLE DESCRIPTIONS

GP-1	WELL NAME
VOCs	TOTAL CHLORINATED VOLATILE ORGANIC COMPOUNDS
HPAH	HEAVY POLYNUCLEAR AROMATIC HYDROCARBONS
LPAH	LIGHT POLYNUCLEAR AROMATIC HYDROCARBONS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
4M	4-METHYLPHENOL
DB	DIBENZOFURAN
BBP	BUTYL BENZYL PHTHALATE
DNP	DI-N-OCTYL PHTHALATE
TPH-D	TOTAL PETROLEUM HYDROCARBONS – DIESEL
TPH-L	TOTAL PETROLEUM HYDROCARBONS – LUBE OIL
TPH-G	TOTAL PETROLEUM HYDROCARBONS – GASOLINE

ND – NOT DETECTED
NT – NOT TESTED

GEOLOGY LEGEND:

GRAVEL
SAND
SILTY SAND
SILT
BEDROCK
GEOPROBE OR WELL SCREEN
SOIL SAMPLE LOCATION
ESTIMATED WATER TABLE ELEVATION (FT. MSL)

ALL DETECTED CONCENTRATIONS REPORTED IN PARTS PER BILLION, EXCEPT SOIL TPH REPORTED IN PARTS PER MILLION.

Horizontal Scale in Feet
0 100 200
0 20 40
Vertical Scale in Feet
Vertical Exaggeration x 5

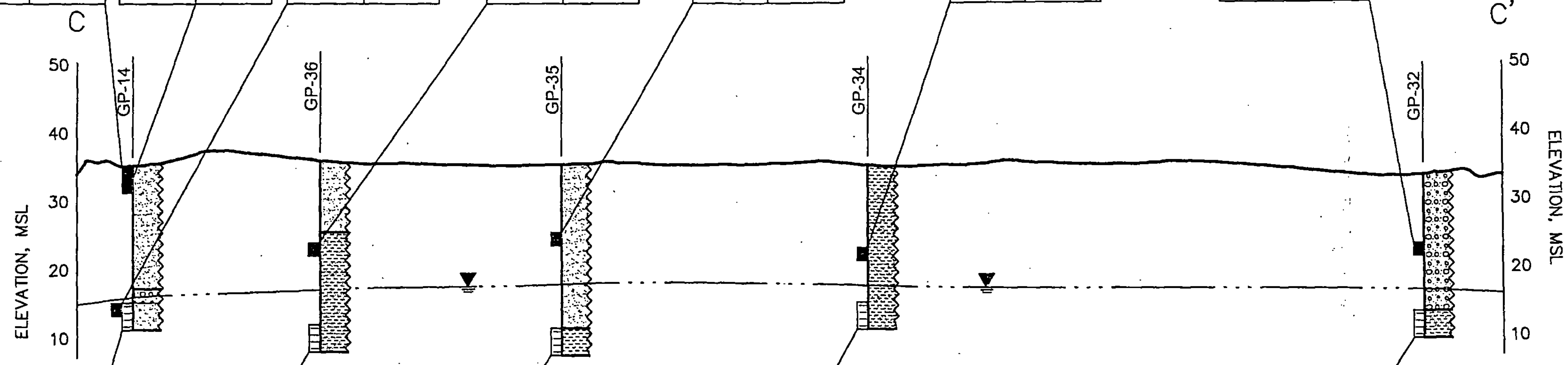
Note: Drawing modified from electronic file provided by IT Corporation.

May 09, 2003 1:02pm cdavidson I:\CAD\Jobs\030162-McCall_Portland\030162\030162 01-04.dwg FIG 6B

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 6B
Cross Section B-B'
McCall Oil and Chemical

	GP-14	GP-14	GP-14	GP-36	GP-35	GP-34	GP-32
VOCs	NT	NT	NT	ND	ND	ND	ND
HPAH	55	42	704	369	165	425	29
LPAH	2.2	2.3	106.9	181	38	206	9
SVOCs							
4M	ND	ND	ND	80	ND	ND	ND
DB	0.6	0.7	2.0	6	0.8	8	ND
BBP	ND	ND	ND	ND	0.7	ND	ND
DNP	ND	ND	ND	ND	ND	ND	ND
TPH-D	14	ND	30	240	25	48	ND
TPH-L	55	ND	110	430	55	160	29
TPH-G	ND	ND	ND	18	ND	ND	ND



	GP-14	GP-36	GP-35	GP-34	GP-32
VOCs	15.75	26.6	109.5	ND	ND
HPAH	2.95	2.81	5.39	0.84	7.2
LPAH	0.63	1.00	1.37	0.53	18.1
SVOCs					
4M	0.2	0.67	1.5	0.75	1.4
DB	0.02	0.03	0.03	0.05	0.2
BBP	ND	0.83	0.43	0.13	0.65
DNP	ND	ND	ND	ND	ND
TPH-D	ND	210	200	2100	700
TPH-L	ND	ND	270	580	1100
TPH-G	ND	ND	ND	130	ND

TABLE DESCRIPTIONS

GP-1	WELL NAME
VOCs	TOTAL CHLORINATED VOLATILE ORGANIC COMPOUNDS
HPAH	HEAVY POLYNUCLEAR AROMATIC HYDROCARBONS
LPAH	LIGHT POLYNUCLEAR AROMATIC HYDROCARBONS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
4M	4-METHYLPHENOL
DB	DIBENZOFURAN
BBP	BUTYL BENZYL PHTHALATE
DNP	DI-N-OCTYL PHTHALATE
TPH-D	TOTAL PETROLEUM HYDROCARBONS – DIESEL
TPH-L	TOTAL PETROLEUM HYDROCARBONS – LUBE OIL
TPH-G	TOTAL PETROLEUM HYDROCARBONS – GASOLINE
ND	NOT DETECTED
NT	NOT TESTED

GEOLOGY LEGEND:

- GRAVEL
- SAND
- SILTY SAND
- SILT
- GEOPROBE OR WELL SCREEN
- SOIL SAMPLE LOCATION
- ESTIMATED WATER TABLE ELEVATION (FT. MSL)

ALL DETECTED CONCENTRATIONS REPORTED IN PARTS PER BILLION, EXCEPT SOIL TPH REPORTED IN PARTS PER MILLION.

Horizontal Scale in Feet
0 100 200
0 20 40
Vertical Scale in Feet
Vertical Exaggeration x 5

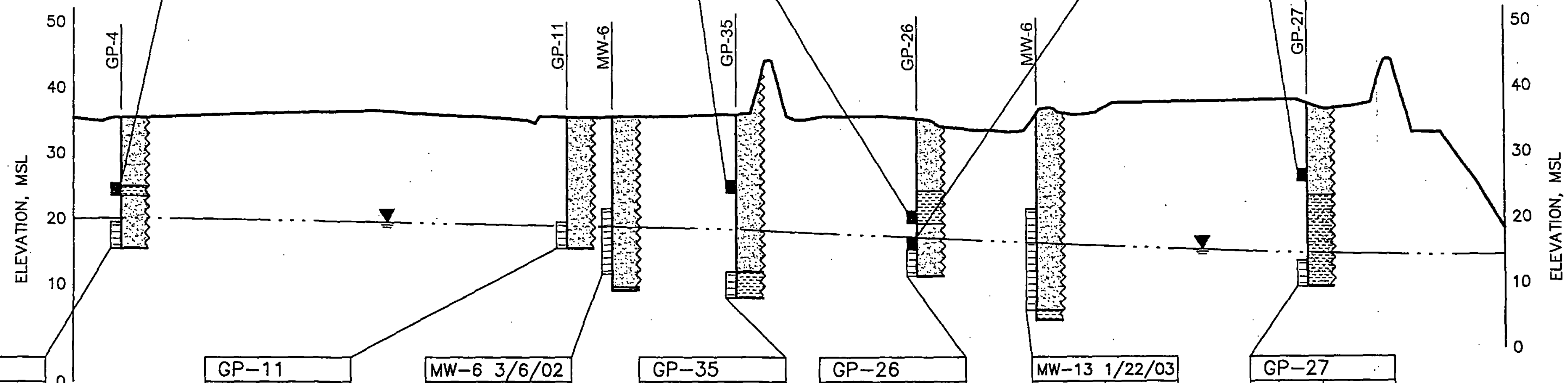
Note: Drawing modified from electronic file provided by IT Corporation.

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 6C
Cross Section C-C'
McCall Oil and Chemical

May 09, 2003 1:04pm cdavidson I:\CAD\Jobs\030162-McCall_Portland\030162\01\030162\01-05.dwg FIG 6C

	GP-4	GP-35	GP-26	GP-26	GP-27
VOCs	ND	ND	ND	ND	ND
HPAH	730	165	501	68	49
LPAH	150	38	226	36	21
SVOCs					
4M	ND	ND	180	ND	ND
DB	ND	0.8	9	2	0.8
BBP	ND	0.7	ND	ND	2
DNP	ND	ND	ND	ND	ND
TPH-D	220	25	68	ND	ND
TPH-L	200	55	170	ND	48
TPH-G	39	ND	ND	ND	ND



	GP-4	GP-11	MW-6 3/6/02	GP-35	GP-26	MW-13 1/22/03	GP-27
VOCs	ND	197.6	1306.4	109.5	ND	ND	ND
HPAH	61.5	0.201	1.00	5.39	0.710	0.37	0.94
LPAH	646	0.13	0.38	1.37	0.52	0.54	1.53
SVOCs							
4M	ND	0.03	0.073	1.5	1.3	28	0.49
DB	19	0.09	ND	0.03	0.02	0.018	0.12
BBP	ND	0.2	ND	0.43	0.08	ND	1.7
DNP	ND	ND	ND	ND	ND	ND	ND
TPH-D	7100	130	240	200	300	1000	170
TPH-L	4400	ND	500	270	500	2300	ND
TPH-G	2500	ND	160	ND	ND	300	ND

TABLE DESCRIPTIONS

GP-1	WELL NAME
VOCs	TOTAL CHLORINATED VOLATILE ORGANIC COMPOUNDS
HPAH	HEAVY POLYNUCLEAR AROMATIC HYDROCARBONS
LPAH	LIGHT POLYNUCLEAR AROMATIC HYDROCARBONS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
4M	4-METHYLPHENOL
DB	DIBENZOFURAN
BBP	BUTYL BENZYL PHTHALATE
DNP	DI-N-OCTYL PHTHALATE
TPH-D	TOTAL PETROLEUM HYDROCARBONS – DIESEL
TPH-L	TOTAL PETROLEUM HYDROCARBONS – LUBE OIL
TPH-G	TOTAL PETROLEUM HYDROCARBONS – GASOLINE
ND	NOT DETECTED
NT	NOT TESTED

GEOLOGY LEGEND:

- GRAVEL
- SAND
- SILTY SAND
- SILT
- GEOPROBE OR WELL SCREEN
- SOIL SAMPLE LOCATION
- ESTIMATED WATER TABLE ELEVATION (FT. MSL)

ALL DETECTED CONCENTRATIONS REPORTED IN PARTS PER BILLION, EXCEPT SOIL TPH REPORTED IN PARTS PER MILLION.

Horizontal Scale in Feet: 0, 100, 200

Vertical Scale in Feet: 0, 20, 40

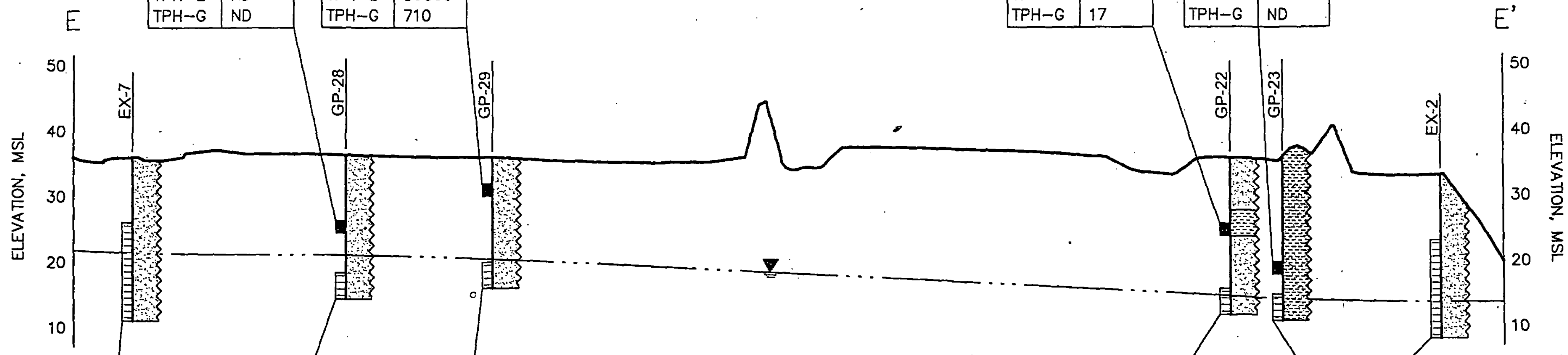
Vertical Exaggeration x 5

Note: Drawing modified from electronic file provided by IT Corporation.

May 09, 2003 1:08pm cdavidson I:\CADJobs\030162-McCall_Portland\03016201\03016201-06.dwg FIG 6D

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 6D
Cross Section D-D'
McCall Oil and Chemical



	GP-28	GP-29	GP-22	GP-23
VOCs	ND	ND	ND	ND
HPAH	1	13630	261	496
LPAH	ND	21370	512	154
SVOCs				
4M	ND	ND	ND	60
DB	ND	ND	32	6
BBP	ND	ND	ND	ND
DNP	ND	ND	ND	ND
TPH-D	ND	18000	310	80
TPH-L	ND	36000	160	220
TPH-G	ND	710	17	ND

	EX-7	GP-28	GP-29	GP-22	GP-23	EX-2 (12/20/00)
VOCs	ND	ND	33	ND	ND	ND
HPAH	0.016	1.64	3.91	0.406	0.205	0.10
LPAH	ND	0.12	0.94	19.53	0.22	0.078
SVOCs						
4M	ND	ND	0.28	0.1	0.2	0.02
DB	ND	ND	ND	0.86	0.097	ND
BBP	ND	0.25	0.33	0.098	0.05	ND
DNP	ND	ND	ND	ND	ND	ND
TPH-D	ND	ND	ND	1100	440	ND
TPH-L	ND	ND	ND	ND	ND	ND
TPH-G	ND	ND	ND	210	ND	ND

TABLE DESCRIPTIONS

GP-1	WELL NAME
VOCs	TOTAL CHLORINATED VOLATILE ORGANIC COMPOUNDS
HPAH	HEAVY POLYNUCLEAR AROMATIC HYDROCARBONS
LPAH	LIGHT POLYNUCLEAR AROMATIC HYDROCARBONS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
4M	4-METHYLPHENOL
DB	DIBENZOFURAN
BBP	BUTYL BENZYL PHTHALATE
DNP	DI-N-OCTYL PHTHALATE
TPH-D	TOTAL PETROLEUM HYDROCARBONS – DIESEL
TPH-L	TOTAL PETROLEUM HYDROCARBONS – LUBE OIL
TPH-G	TOTAL PETROLEUM HYDROCARBONS – GASOLINE

ND – NOT DETECTED
NT – NOT TESTED

GEOLOGY LEGEND:

- GRAVEL
- SAND
- SILTY SAND
- SILT
- GEOPROBE OR WELL SCREEN
- SOIL SAMPLE LOCATION
- ESTIMATED WATER TABLE ELEVATION (FT. MSL)

ALL DETECTED CONCENTRATIONS REPORTED IN PARTS PER BILLION, EXCEPT SOIL TPH REPORTED IN PARTS PER MILLION.

Horizontal Scale in Feet
0 100 200
0 20 40
Vertical Scale in Feet
Vertical Exaggeration x 5

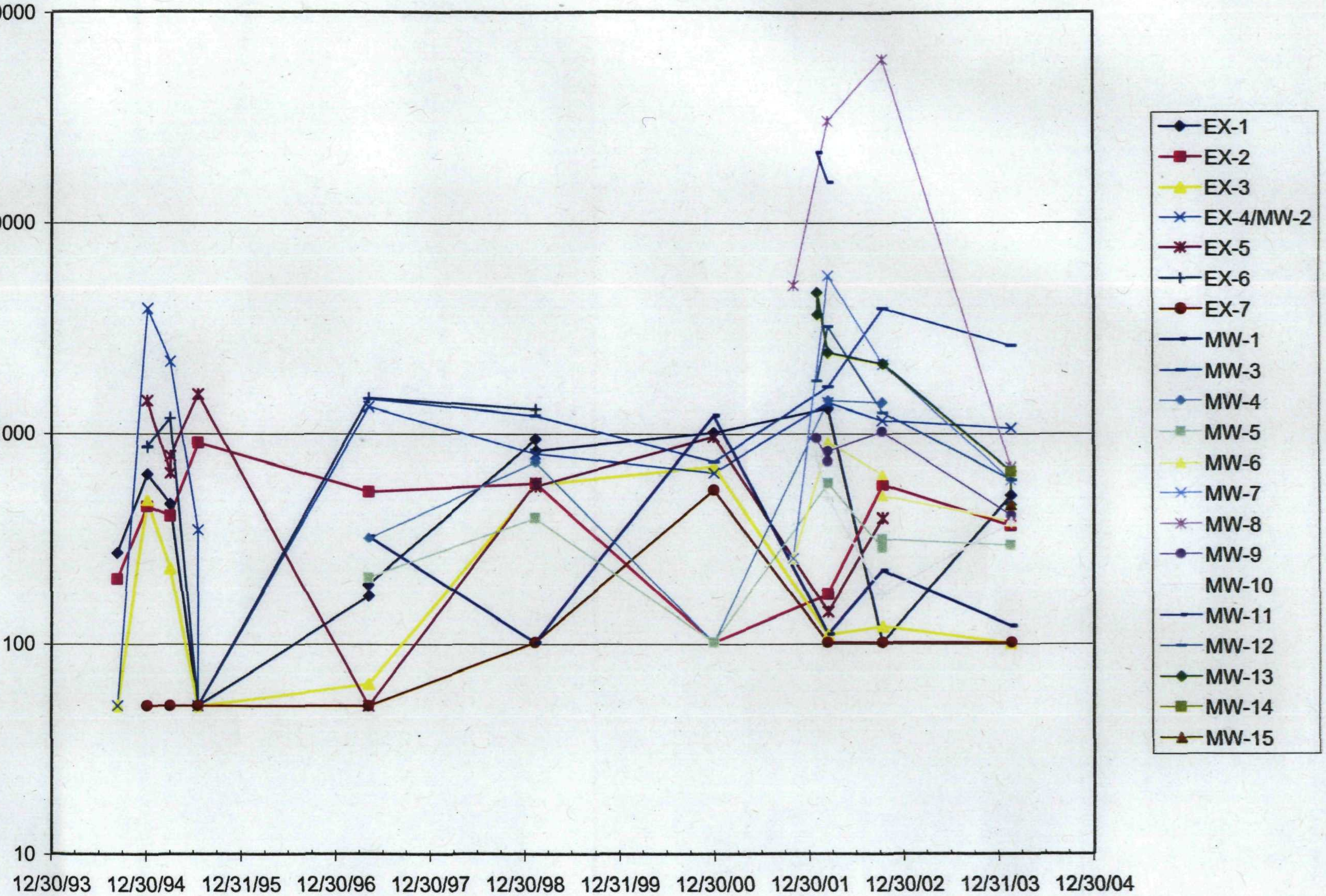
Note: Drawing modified from electronic file provided by IT Corporation.

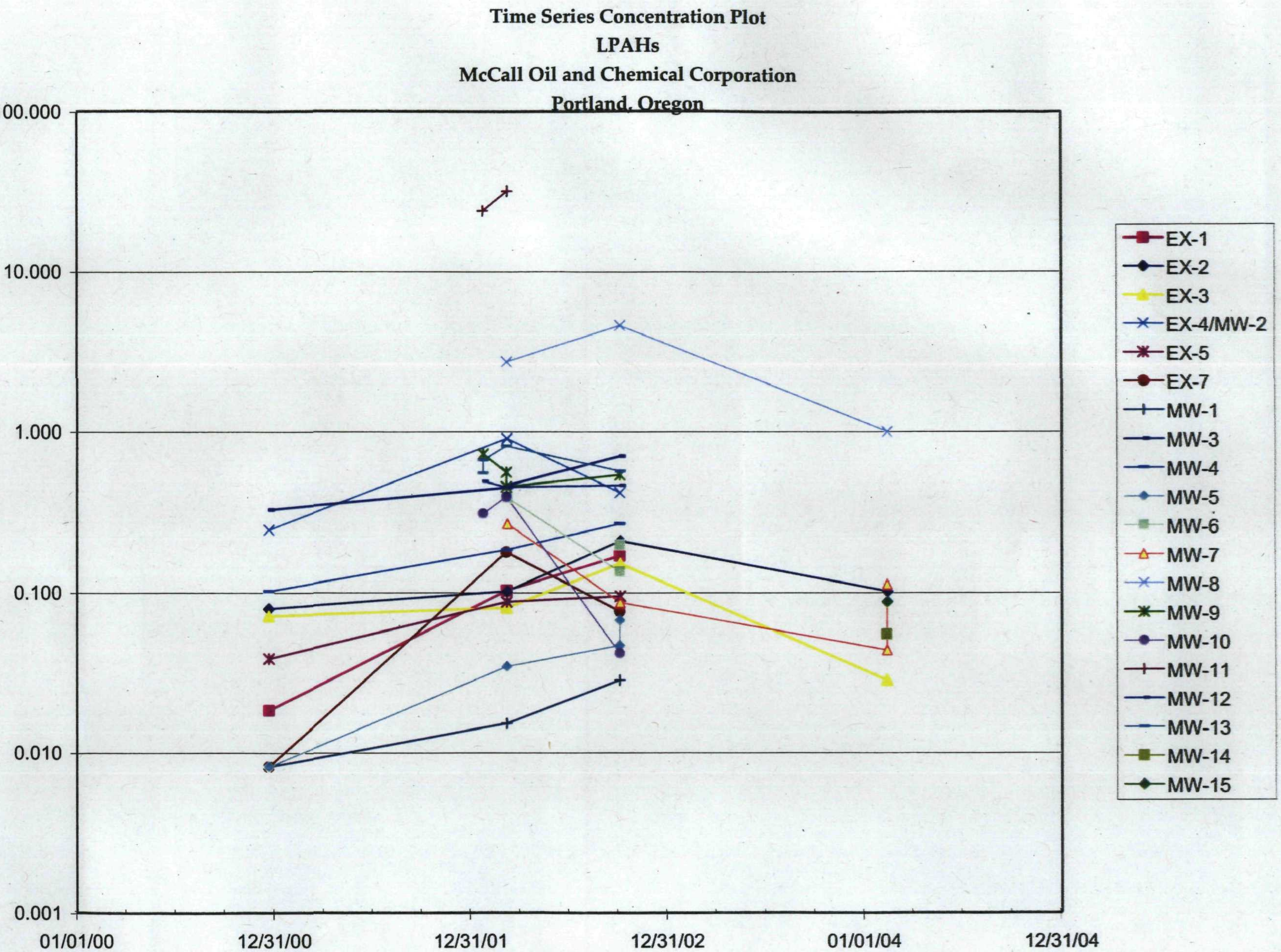
May 09, 2003 1:11pm cdavidson I:\CAD\Jobs\030162-McCall_Portland\03016201\03016201-07.dwg FIG 6E

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 6E
Cross Section E-E'
McCall Oil and Chemical

Time Series Concentration Plot - Total TPH
McCall Oil and Chemical Corporation
Portland, Oregon





Time Series Concentration Plot
LPAHs
McCall Oil and Chemical Corporation
Portland, Oregon
100.000
10.000
1.000
0.100
0.010
0.001
01/01/00
12/31/00
12/31/01
12/31/02
01/01/04
12/31/04
EX-1
EX-2
EX-3
EX-4/MW-2
EX-5
EX-7
MW-1
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11
MW-12
MW-13
MW-14
MW-15

Time Series Concentration Plot
HPAHs
McCall Oil and Chemical Corporation
Portland, Oregon